

ITEMS OF INTEREST.

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ORIGINAL COMMUNICATIONS.

THE PROFESSION AND OUR DENTAL COLLEGES.*

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The dental colleges of the United States, by concert of action, have advanced the curriculum, so that it is to-day more systematic than in other professional schools.

The effort of the National Association of Dental Faculties to unify the course of study in the several institutions, while not entirely successful, has brought the colleges closer together in the methods of teaching, and the matter taught, than prevailed before the organization of that body.

The extension of the course of study over a period of three years has made it possible for students to bestow more time on the practical phases of anatomy, histology, bacteriology, chemistry, technology, etc., besides becoming more proficient in operative and prosthetic dentistry. The changing of the course, therefore, from two to three years has not only met with the approval of the profession, but has been equally gratifying to the faculties; so this relation of our colleges to the profession has been most happy.

"It will not be doubted by any one that it is our solemn duty in the conduct of dental education to see to it that before a student is permitted to enter on its study he has shown prompt aptitude and has already acquired certain fundamental knowledge. It avails nothing to point to the rare illustrious men who have leaped at a few bounds from the plowshare to the front rank of scientific or judicial eminence, and who have served immemorially as instances to support the fallacies of those who from selfish motives or from ignorant prejudice decry thorough education. Let not the rest of us, only ordinary sons of toil, be misled by the hope of such exceptional careers."

The relation of our colleges to the profession in regard to making our students more proficient practitioners scientifically, as well as practically, is one on which the colleges and the profession

Read before the Illinois Society.

are interdependent. A practitioner may send to a college a student whose educational qualifications for admission are not of as high an order as they should be, and consequently his path to success is a most laborious one.

I cannot better express my ideas on the subject of preliminary education than to quote from Mr. J. Ernest Lane, Fellow of the Royal College of Surgeons, England, who, in an article on medical education and medical practice,* states that too much stress is laid on the benefits to be derived from what is termed a modern education, and suggests that a judicious admixture of the ancient with the modern would be of more benefit than an exclusive knowledge of either the one or the other. He points out that anatomical nomenclature, and in fact nearly all the technical terms met with in the study of medicine, are derived either from Latin or Greek, and that it is necessary to acquire at least an elementary knowledge of these languages in order to obtain an intelligent knowledge of their profession. As bearing on this subject, he quotes the words of a distinguished member of the profession, who had recently given it as his opinion that, "if a boy destined for a profession, were to be taught nothing but reading, writing and arithmetic till he was eleven, and after that nothing but Greek, Latin and mathematics till he was eighteen, at fifty that boy would turn out a more widely cultured, better read man than if in his early years he had been stuffed with geography, history, philosophy, and the two-penny half-penny fragments of chemistry, botany and zoölogy which constitute school science."

If the views of Mr. Lane were presented to educators of large experience in medical and dental schools, I have no doubt that, after deliberate consideration, they would be heartily endorsed.

As we look over the directory of American dentists and place a mark opposite the names of those whose writings have made an indelible impression on our literature, and a profound impression on the dental mind, we note how few have enjoyed the great privilege of a university education. Had such opportunities been offered and embraced, however, the sphere of usefulness of these leaders in dentistry doubtless would have been materially enlarged.

On the other hand, a practitioner places a student in college whose affluent circumstances and broad preliminary education seem to especially fit him for his long course of professional study. His funds enable him to live comfortably, his education renders his professional study comparatively easy, but is there not another qualification essential to the success of a dentist?

It is my opinion that a course in a manual training school and

* *British Medical Journal*, October 7th, 1893.

a certificate of satisfactory work from teachers in such an institution, would be a very important stepping stone in entering the dental profession. Such a preliminary course prepares the student to engage in the manipulation of metals, the handling of fine instruments, and the manual dexterity essential to his success as a dental practitioner. A thorough knowledge of anatomy, chemistry, physiology, histology, *materia medica* and therapeutics, bacteriology, pathology and surgery, indispensable as it is in rendering a man qualified to practice dentistry, would very poorly indeed prepare him for the duties of his profession if he had not the manual dexterity to skilfully practice operative and prosthetic dentistry. My experience as a teacher—though not extending over many years—has led me to the belief that all colleges should reserve the right to return to a student his fees and dismiss him whenever, in the judgment of the faculty, he cannot acquire the manipulative skill essential to enable him to practice dentistry successfully. To retain a student who by nature cannot acquire such skill and carry him on through a three years' course of study, and then reject him at the close of his final examinations, seems too unjust on the part of an institution to be excused.

Again, I think a student should never attempt any pursuit, unless he has a special desire to make it a life work or his vocation. I have no faith in the success of an individual who will take up the study of a profession just for a makeshift, or for what money he may possibly see in it. His work must be pursued with that interest that comes with a love for it, and he must be prompted by the desire to excel, not stand among the mediocrity of his profession, but with a determination to reach the topmost rung of the ladder of professional fame. Opportunity, it is true, may have a great deal to do with that, but a man's will power has a great deal more. A student who takes up the study of dentistry should be impressed by his preceptor with the fact that he has undertaken one of the most confining, laborious and enervating occupations known. It is only by force of habit that the busy dentist is able to get the outdoor exercise necessary to preserve his health.

The necessity of imparting practical instruction to students makes it necessary to have a well-equipped infirmary in every college, and patients on whom all of the operations in dentistry are to be performed. The question of how to supply students with patients has taxed the faculty of every dental college when first organized; and then the profession have in many instances criticized colleges for accepting patients who were not in a financial condition to warrant their applying to a college infirmary for operations. It seems that a matter of this kind should be so

adjusted between the members of the profession and the colleges as to be quite satisfactory. It is true that dental college infirmaries often receive and perform operations for persons who are abundantly able to compensate a practitioner for his services, but the question of the patient's financial standing cannot be easily determined by college authorities. On the other hand, it is equally just to say that members of the profession extract many teeth which might be filled with cement or amalgam in a college infirmary for a fee which the patient might well afford to pay. Many such teeth are extracted because the patient would not be able to pay a fee for filling them that would compensate a dentist for his services. Therefore, it seems to me that poor patients, who have their teeth extracted for want of money to have them treated and filled should, instead of having them extracted, receive a certificate to a college infirmary, issued by the dentist, stating that this patient's circumstances are such that he should be admitted to an infirmary and receive such treatment as is necessary.

This brings us to the question of the relation of the profession to our dental colleges. The colleges must have patients that they may teach practical dentistry. The colleges should not receive patients who are financially able to compensate dentists for their services. Members of the profession should not extract teeth which are susceptible of being treated and filled, on the ground that the financial condition of the patient will not permit them to spend the necessary time to treat them and put them in a healthy, satisfactory condition, but should in all such cases issue a card to such a patient and send him to a college infirmary, where such a card should admit him to treatment.

I believe not more than 20 per cent of the population of the United States employ dentists for the purpose of treating and preserving their teeth. The remaining 80 per cent do not engage the services of a dentist for any other purpose than for the extraction of teeth and the insertion of artificial ones. I do not make this statement from gathered statistics, but as an estimate made in a general way. Let us assume that there are 800 dentists in the city of Chicago, with a population, in all probability, of at least 2,000,000 of people, and each dentist treats and fills teeth for 500 people during a year. This would make 400,000, or 20 per cent of the entire population of the city, the remaining 1,600,000, if this statement be correct, would employ dentists only for the extraction of teeth and making of plates. It seems unnecessary to state to this Society that the work devolving on us, and especially to the residents of Chicago, in educating this 1,600,000 people up to the value of the teeth and the advantages to be derived by preserving

them, is a greater work than the most earnest educator has contemplated.

The mission of the dental college has long been supposed to be for the preparation of young men to engage in the practice of dentistry. Its teachings have elevated dentistry and placed it on a higher plane than it otherwise could have taken, but its usefulness is by no means limited to the preparation of students for dental practice. In my opinion its most important work is in educating the public to an appreciation of the great benefits which are bestowed on them by scientific and practical dentistry.

Many a young man is quite willing to assert that the nucleus of his practice was the patient whom he first met in a dental college infirmary.

The law governing the practice of dentistry in the State of Illinois has accomplished a great deal for the profession and for the public. The benefits that the profession have derived have been in a realization that men entering on practice in our State have been required to present credentials authorizing them to practice or take a State Board examination. It is true that our law has certain defects which should be amended; and in speaking on this subject I feel that it comes within the province of my paper, for it is the relation of the profession to the schools from which our ranks are augmented. I believe that the Illinois State Board of Dental Examiners has endeavored, from the time that the Board was first organized up to the present, to conscientiously discharge its duties. I am also aware that it is impossible for a body of men acting in that capacity to please every one, and what I shall say in regard to the relation of the Board to colleges and to the profession is not said in a spirit of fault-finding. It is not with a view of hurting the feelings of any one; but certain facts confront us, and it seems that steps should be taken to correct what is generally regarded as an error. The National Association of Dental Faculties, by increasing the course of college study from two to three years, did so that young men might become more proficient in dental knowledge. It seems, therefore, that the portals of the profession should not be entered by a shorter path. It has transpired on several occasions that permanent licenses have been issued by our State Board to young men who have had but a single course of study; and so their further study has been discontinued, and further proficiency has not been acquired. I do not believe it is the desire of the State Board of Dental Examiners to lower the standard of the profession by admitting to our ranks men who should pursue their studies further and complete their professional education. The relation which the profession should

bear to the colleges should be to aid them by counsel and friendly intercourse in the discharge of their momentous duty, and send to them only such young men as are qualified by nature and by education to intelligently pursue the study of dentistry. The practitioner's further duty is to support the infirmary, as far as can be, by sending patients to it who are unable to satisfactorily compensate him for his services, so that students may have an opportunity to acquire practical knowledge and that "delicacy of manipulation which comes only with experience."

Another suggestion I might make to the profession is to visit the dental colleges more frequently, and by their presence stimulate the students to make their very best efforts.

The duty of the colleges to the profession should be to guard their entrances and their exits; admit only such young men as possess a good education; watch them carefully; advance them practically and scientifically; and in the event of their failure to become skilled in the operating room and laboratories, they should reserve the right to return them their fees *pro rata*, and advise them to engage in some other vocation.

Another duty of the colleges to the profession should be to require certificates from persons whose financial ability to compensate a dentist for his services is at all questionable, and on such certificates admit them to the privileges of the college infirmary.

So then let the State Board of Dental Examiners, the National Association of Dental Faculties, the profession, and the colleges, labor unitedly to advance our profession, so that our unprecedented achievements during the quarter of a century just closed may be rendered incomparable with those yet to come.

DEAR DR. WELCH:

In reply to your desire to have me give the ITEMS my life long experience in Practical Dentistry, as well as to many of my followers, I wish to give them, first of all, a new chapter on the geometrical and mechanical laws that govern the human jaw, and show more clearly in detail its application to the setting of artificial dentures; its uses in correction of irregularities and the contouring of all fillings; its value in the treatment of pyorrhea alveolaris; and show anatomically how it underlies every part of the operations that fall under the notice of the general practitioner.

Heresetofore it has been impossible, in the field of invention, discovery and experiment to go into every minutia involved in this original labor and investigation, and much has been left untouched by my pen, waiting till I could have the time to reconsider and

reissue my life's work. Besides, till now, the way has not been clear in this one line, but the light is creeping in on good men everywhere to see that *articulation alone* is worth the study of the best minds of the profession, and as the most scientific discovery ever given for the elevation of dentists as mere mechanics to a higher plane.

I prefer to take up this subject at once, as of the most vital importance of the hour, and others will follow as I see the demands most urgent, and finally place them in regular order in book-form, believing I can be of more benefit by this plan than by the usual method.

W. G. A. Bonwill, 2009 Chestnut street,

AUGUST 24th, 1895.

Philadelphia, Pa.

DENTAL NOMENCLATURE.

Adopted by the Northwestern University Dental School.

This group of words comprises the following nouns, each of which, when used to particularize a surface, wall, or cavity, etc., is, in English, preceded by a descriptive adjective; as, buccal surface, distal surface, buccal cavity, etc. These adjectives always answer the question, which; as which surface? The buccal, etc.

1. Angle—As mesio buccal angle of a molar.
2. Canal—Names of the canals in the roots of teeth that have more than one root; as lingual root, buccal root, etc.
3. Cavity—Names of the cavities in teeth; as mesial cavity, occlusal cavity, etc.
4. Cusp—Names of the cusps of the teeth; as disto-buccal cusp of lower molar.
5. Horn—Names of the horns of the pulp of a tooth; as disto-lingual horn of molar pulp.
6. Groove—Names of the grooves, or developmental lines of the teeth, which map out the lobes; as lingual groove in lower molar.
7. Lobe—Names of the lobes of the teeth; as mesio-buccal lobe in upper molar.
8. Margin—As the margin of the buccal surface, or any other surface of a tooth, or the margin of a cavity, or the enamel margin.
9. Ridge—Names of ridges that occur on the teeth; as marginal ridge, lingual ridge, etc.
10. Root—Names of roots of teeth that have more than one; as disto-buccal root of upper molar.
11. Surface—Names of the surfaces of teeth; as buccal surface, mesial surface, etc.

12. Thirds—Names of the parts of the surfaces of the teeth when divided into thirds; as gingival third, middle third, and occlusal third.

13. Wall—Names of the walls of cavities; as lingual wall, axial wall, etc.

The following is a list of the adjectives, the uses of which are illustrated above. They are so familiar that it seems unnecessary to define them.

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|---------------|------------|--------------|
| 1. Occlusal, | 4. Mesial, | 7. Lingual, |
| 2. Incisal, | 5. Distal, | 8. Axial, |
| 3. Proximate, | 6. Buccal, | 9. Gingival. |

This makes up a list of twenty-two words, the combinations of which form much the largest group of technical expressions used in dentistry. While they are used much more in dental anatomy and operative dentistry than in other departments, they are used largely in all departments that deal either directly or indirectly with the teeth. It is therefore the most important list of words that can be taken up for a first effort at harmony in usage and in teaching.

Of the nouns of this list we may, for the present purposes, leave out of consideration all except angle, cavity, margin, and surface—four. The others, with their uses, are familiar to our students through their work in the technic classes, and errors of use do not give rise to so much confusion. An explanation of the uses of these four nouns as combined with the above list of adjectives will now be given.

THE USES OF THE TERM SURFACE.

This term is combined with certain adjectives to designate the particular surfaces of the teeth, as buccal surface, lingual surface, mesial surface, distal surface, and occlusal surface; all of which are too familiar to need further explanation. Besides these we have two terms which designate certain kinds of surfaces; as proximate surface, or proximate surfaces. This represents a surface that lies next to an adjoining tooth, but otherwise designates no particular one of such surfaces. Also the term axial surface or axial surfaces, which designates a surface or surfaces that stand parallel with the long axis of the tooth, but does not designate a particular one of these surfaces. (The axial surfaces are mesial, buccal or labial, distal, and lingual.)

THE USES OF THE TERM MARGIN.

We have margins of surfaces of the teeth and margins of cavities. The latter are also called enamel margins. These mar-

gins each take the name of the surface of the tooth which they approach, or join with, except those next to the gum, or gingival line, which are called the gingival margins. This rule is universal, and has no exceptions other than that the incisors and cuspids have their proximate surfaces V-shaped, and therefore have but three margins. The margins of buccal or labial surfaces, and of lingual surfaces, are named in precisely the same terms. A buccal, labial or lingual surface has four margins; a mesial margin, a distal margin, an occlusal or incisal margin, and a gingival margin. (In the incisors and cuspids the term *incisal* takes the place of *occlusal*.)

Mesial surface margins and distal surface margins are named in the same terms. A mesial or distal surface of a molar or bicuspid has four margins; a buccal margin, a lingual margin, an occlusal margin, and gingival margin. Mesial and distal surfaces of the incisors and cuspids have but three margins; a labial margin, a lingual margin, and a gingival margin. Incisors and cuspids that are much worn, so as to destroy the V-form of their proximate surfaces, may be said to present four margins; the fourth being called the *incisal* margin.

MARGINS OF CAVITIES.

The margins of cavities are designated by the same adjectives that designate the particular walls of the cavities; that is to say, the gingival wall has its gingival enamel margin, the buccal wall has its buccal enamel margin, etc. In common usage the term may be simplified to buccal margin, lingual margin, etc., if it is clearly understood that the term margin refers to the immediate margin of the cavity, and not to the wall of the cavity. There is much confusion in dental writings at the present time for the want of clear distinctions between the terms *wall* and *margin* as applied to cavities. Clear distinctions between these are important.

THE USES OF THE TERM CAVITY.

This term needs no definition. It is only the method of naming cavities that is important here. The names of cavities are simply the names of the surfaces of the teeth involved, but using the term *cavity* instead of *surface*; as mesical cavity, distal cavity, buccal cavity, etc. When two or more surfaces are involved in the carious process and united in one cavity, whether by cavities beginning separately and becoming united by extension of decay, or beginning in a single surface and involving another surface, or surfaces, by extension of caries, or by extension in excavating, the cavity is named by compounding the names of the surfaces involved.

Thus mesio-occlusal cavity, disto-occlusal cavity, bucco-occlusal cavity, disto-bucco-occlusal cavity, etc. Complex names will include all surfaces involved in the complex cavity. Cavities involving more than one surface are to be called complex cavities as a general term rather than compound cavities. (This is a brief statement of the rules for naming cavities formulated by E. Andrieu, of Paris, 1889, in his work on operative dentistry, and which he says is systematized from the customs of the best of American authors.)

WALLS OF CAVITIES.

The walls of cavities which are toward the margins of the surface involved in caries take the adjective names of those margins, independent of the forms of the cavities. Thus a mesial cavity in a molar or bicuspid has a buccal wall, a lingual wall, a gingival wall, and an occlusal wall. But the wall which is parallel with the mesial surface, and opposed to it, is called the axial wall. The universal rule is, that wall of a cavity which is parallel with an axial surface opened by caries and opposed to it is called the axial wall. Thus in a mesio-occlusal cavity in a bicuspid or molar we have a buccal wall, a lingual wall, a gingival wall, and an axial wall.

That wall of occlusal cavities that is next the pulp is called the floor of the cavity. This term is very unsatisfactory, for the reason that it cannot be combined with the other names of the walls of these cavities in forming the names of angles, etc.

ANGLES.

We have angles of teeth, angles of the surfaces of teeth, and angles of cavities in teeth. These are distinct from each other. Much confusion yet exists as to the naming of these angles, which gives rise to misunderstandings, especially in giving directions for the shaping of cavities. For this reason it is important that clear definitions be given, which can be done only by following out a distinct system. Though the terms, or their equivalents here given, are all found in the literature, no one person has used all of them, nor given any system of rules for the government of their use. This seems necessary to accuracy, for the subject is intricate in its nature and will require some effort for its complete mastery. It can be quickly learned by the pupil, however, when put before him in a systematic and orderly way. He will then be far better able to understand the meaning of his teachers on all subjects to which it is applied.

ANGLES OF THE TEETH.

Angles of the teeth are of two kinds; line angles and point angles.

In considering the angles of the teeth, each tooth crown must be considered as a solid of cuboid form having the angles common to cubes. The fact that these angles are more or less rounded is, of course, to be recognized, but names are applied as though they were not.

LINE ANGLES.

Each molar or bicuspid tooth crown presents four line angles running from the margin of the occlusal surface to the gingival line. These are formed by the junction of the margins of the four axial surfaces, the buccal, lingual, mesial and distal. All angles are named by forming a compound word of the adjective names of the combining surfaces. As line angles are formed by the union of two surfaces along a line the name is a binary compound. Therefore, the names of these four angles are the mesio-buccal angle, disto-buccal angle, mesio-lingual angle and disto-lingual angle.

Each of the four axial surfaces forms a line angle of junction with the occlusal surface; the mesio-occlusal, disto-occlusal, bucco-occlusal, and linguo-occlusal angles. These latter four-line angles are also called the marginal ridges of the occlusal surface.

The incisor teeth have the same axial line angles as the molars and bicuspids, in the naming of which the word labial takes the place of buccal, otherwise the names are the same. The incisors and cuspids being of wedge form and coming to a cutting edge, have not the occlusal line angles.

POINT ANGLES OF THE TEETH.

Each molar and bicuspid tooth crown has four point angles. These are formed by the junction of three surfaces forming a corner, and are named in ternary compounds representing the three uniting surfaces. Thus, mesio-bucco-occlusal angle, disto-bucco-occlusal angle, mesio-linguo-occlusal angle, and disto-linguo-occlusal angle.

The incisors and cuspids being of a V-form on their proximate surfaces do not present the same point angles as do the bicuspids and molars. The angles formed by the junction of the proximate surfaces with the cutting edge are called the mesio-incisal angle and the disto-incisal angle.

ANGLE OF SURFACES.

Each surface of a tooth has four margins and the junctions of these marginal lines form four angles. These angles are those of a plane, and are named in binary compounds. Thus the buccal surface of a molar or bicuspid has a mesio-occlusal angle, a disto-occlusal angle, a mesio-gingival angle, and a disto-gingival angle. The angles of lingual surfaces are named in the same terms as the

corresponding angles of buccal surfaces. In naming the angles of the labial and lingual surfaces of the incisors and cuspids the term *incisal* is used instead of *occlusal*. Otherwise the terms are the same.

The margins of the mesial and of the distal surfaces are named in like terms. A mesial or a distal surface of a molar or bicuspid has four angles; a bucco-occlusal angle, a bucco-gingival angle, a linguo-occlusal angle, and a linguo gingival angle. The proximate surfaces of the incisors and cuspids being of a V-form, and presenting but three margins, have but three angles; these are the labio-gingival angle, the linguo-gingival angle, and the *incisal angle*.

Some care should be exercised to prevent confusing the angles of surfaces with the angles of the teeth.

ANGLES OF CAVITIES.

It has been explained that the crown of a tooth must be regarded as a cube with the angles more or less rounded, and that names of surfaces and angles must be applied with geometrical precision. With cavities this becomes even more important than with the teeth themselves, for the reason that we desire to indicate the shaping of walls and the position of pits, grooves, or undercuts, with the greatest precision. Cavities, instead of being considered as cubes, are regarded as cuboid spaces, and for their description the same geometrical forms of speech are required as for the teeth.

A simple cavity having five walls, as a labial or buccal cavity, has three sets of angles, each set consisting of four, or eight-line angles and four-point angles. There are four-line angles which run from the enamel margin of the cavity to the axial wall. They are formed and named thus: The mesio-gingival angle, formed by the junction of the mesial and gingival wall of the cavity. The disto-gingival angle, the mesio-occlusal angle, and the disto-occlusal angle, each of which are formed by the junction of the cavity walls named. This principle applies to the naming of all cavity angles of this class, with the one exception of the *incisal angle* in the cavities of the proximate surfaces of the incisors and cuspids. Indeed, the names of the angles of cavities are in the same form, precisely, as the names of the angles of the surfaces of the teeth in which they occur, and that part of the cavity wall which is toward the angle of the surface is called its angle, no matter what the form of the cavity may be.

The second set of line angles are those formed by the junction of the other four walls (mesial, gingival, distal, and occlusal, in buccal or labial cavities) with the axial wall. These are named by compounding the names of the walls that combine, or join, to form

the angle; as axio-mesial angle, axio-gingival angle, axio-distal angle and axio-occlusal angle. This illustrates sufficiently the principle of the naming of the axial line angles. It is universal in its application. In the proximate surfaces of the incisors and cuspids where there are but three walls there are but three axial line angles.

The third set, or point angles of cavities, are named on the same plan as the naming of other point angles of cubes; namely, by combining the names of the three surfaces combining to form the corner. Thus in a simple buccal or labial cavity we have a mesio-gingivo-axial angle, a disto-gingivo-axial angle, a mesio-occluso-axial angle, and a disto-occluso-axial angle. In labial cavities inciso should take the place of occluso. This principle of naming is also universal, with the one exception that in the triangular surfaces of the incisors and cuspids instead of the two occlusal point angles we have but one, which is called the inciso-axial angle.

PLAIN TEETH IN BRIDGE-WORK.—To avoid the exposure of gold at the cusps, I select a plain tooth and grind to conform to the gum. The heads of the pins are either filed round or pressed together, so a backing may be placed on the tooth; back with pure gold, or with very thin platinum, so it can be burnished to the tooth well; fit a very narrow cap on the end of the tooth touching the gum. This gives a solid rest for the tooth; hold this in place with a little rosin and wax; put the tooth to place; invert and solder.

The case should be heated gradually to prevent checking the teeth.
H. W. Allwine, Omaha.

CARIES FROM FERMENTATIVE DYSPEPSIA.—An inhibitory influence may be attained, by intestinal antisepsis, through the use of dermatol (the sub-gallate of bismuth), given in five-grain tablets, before or after meals.
R. E. Hinman.

TO PREVENT OozING FROM GUM MARGINS IN CROWN OR BRIDGE SETTING.—Apply etherial pyrozone to root and gum margin, sufficient to blanch the tissue to the extent of a narrow band around the root end. Will absolutely cleanse the parts from adherent mucus or blood serum; sealing the surface of the mucous membrane; preventing oozing of fluids to interfere with the adhesion and setting of the cement. Used in setting crown or bridge.
E. C. Kirk.

DENTAL EDUCATION.

In perusing the dental college commencements that have reached us, it is, indeed, highly gratifying to note the improved facilities offered. In many they have been purged and augmented. In the lists before me are names of distinguished gentlemen. The number of studies have been increased; histology, which a few years ago received little consideration, is now an essential study; bacteriology, that profound branch, is receiving marked attention. The possibilities of orthodontia are unraveled, along with metallurgy, therapeutics, dental technics, and last, but not least, crown- and bridge-work. In the study of these different subjects the effort is made to render them plain and learnable. The microscope and stereopticon attachment are the best ways to teach the intricate study of histology, pathology, and bacteriology. There is also a practical course of operative technics, metallurgy, prosthetic dentistry, crown- and bridge-work, etc. These changes have, doubtless, been brought about by the combined influence of the association of dental faculties and dental examining boards. The former prescribes the studies and qualifications necessary to become a successful graduate, and the latter sees to it that the graduate has received the proper amount of knowledge. Much credit for the furtherance of our profession is due these honorable bodies, though they have received abuse and opposition without stint.

D. E. Wiber, Washington, D. C.

MEN THAT SHOULD NOT BE TOLERATED IN THE DENTAL PROFESSION.

The man who is never tired of repeating to everybody, and at all hours of the day, that he has been practicing dentistry for forty years.

The code-of-ethics man who believes that all advertising dentists should be hanged and quartered.

The paper-reading fiend that on every available occasion comes up with a paper bristling with scientific terms and with all the longest words we have in the English language, yet in substance says nothing that all his hearers haven't forgotten before they left the dental college.

The man who discusses such papers with the sole object of seeing his name in print.

The dental society men who mutually admire and softsoap each other at every meeting or convention. I would suggest that

these men found a dental mutual admiration society, and relieve us from the suffering of having to read so much trash in the dental journals.

The tortuous nerve-canal perfect-filling crank.

The man whose papers have been written by somebody else and are produced as his own.

The man who cries down bridge-work because he doesn't know how to do it.

The man who claims that no dentist should undertake to perform any dental operation till he can do it in the most approved manner. This reminds me of the old woman who wouldn't allow her daughter to go bathing till she had learned how to swim.

The man who never makes a mistake, and who has never had a failure to record.

Francis Eschauzier, San Luis Potosi, Mexico.

If we apply force on one point of a tooth—say a central incisor—in a forward direction, however near the margin of the gum we attach the power, the tendency will always be to force the crown forward, leaving the apical end of the root in its original position, or with a tendency, perhaps, to force it in an opposite direction; because the fulcrum, or that which receives the immediate force, will, under those conditions, always be the opposing margin of the alveolar socket. If, instead of that, we band the tooth and solder a rigid upright bar to its anterior surface which extends above the gum margin, and to this upper end we attach another rigid bar that is threaded at its posterior end and passed through a long anchorage tube attached to the molars, with the nut anterior to the tube, we will still force the crown forward, leaving the end of the root where it was, because the fulcrum is still the same; the power is only applied at one point a little higher on the tooth.

But now, if we attach a small wire to the lower end of the upright bar, and pass it through another tube which is fastened to the same anchorage that the first one was, with a nut at the posterior end, we have something to prevent the forward movement of the crown. In other words, we have changed the fulcrum from this point in the socket to the occluding end of the tooth, and now, as we apply our force, we have complete control of our power, and can direct it to the forward movement of the entire tooth.

Dr. Case.

THE NEW ILLUMINANT.

An exhibition was recently given at the residence of Mr. Edward C. Napheys, 2024 North Broad street, of the domestic use of the new gas acetylene, which was described in "S. M.'s" Washington letter to the *Star* several weeks ago. It is a product of carbide, which is made from lime and carbon (in the form of coal dust), reduced in an electric furnace. The carbide, exposed to moisture, evolves a gas very rich in carbon, which, in the process used, is liquefied, and, being furnished in this form, supplies gas, which may be used in the ordinary way, but with much smaller burners than are commonly used. What the guests saw was a cylinder in the cellar three or four feet long and about four inches in diameter, containing about 50 cubic feet of the gas under considerable pressure. It held what was said to be the equivalent of 1,000 cubic feet of city gas. This cylinder was connected with the pipe system of the house, the city gas being cut off. A large number of one foot burners were lighted, and the whole house appeared to be brilliantly illuminated, though the number of burners was actually less than would ordinarily be employed.

In the dining-room there was a cluster of six or eight, in the sitting-room three made the apartment as light as day, and in the parlor four electric lights "paled their ineffectual fires" before four gas burners supplied with acetylene. The flame at the burners was not much larger than the blue part of a batswing burner flame supplied with city gas, but it was intensely white, and the blue part was almost indistinguishable.

There was no doubt about the illuminating value of acetylene, and the guests were informed by Mr. Joseph A. Vincent that carbide could be produced at such low cost as to compete with city gas at 16 cents per thousand cubic feet. The calculation, he said, was the result of tests made by distinguished scientists under favorable conditions.

The gas could be furnished to consumers from a central station or served in cylinders to isolated houses. The candle power of the flames by photometer measurement is fifty-six, and it is quite certain that the gas is in every way superior to city gas. It is said to contain ninety-three per cent of carbon. Mr. Vincent, Mr. Napheys and Mr. C. C. Adams, of the Postal Telegraph Cable Company have obtained control of acetylene for Philadelphia, and Mr. Napheys' house is the second one in the United States to be equipped with the new illuminant. Every one of the many people present pronounced it a wonderful invention.

THE DENTAL LAW OF NEW YORK.

The State of New York has the only ideal law as regards professional education in America. The Board of Regents, who are elected by the Legislature, conducts both the preliminary and final examinations. The colleges are simply educators. A man comes and presents a certificate from the Board of Regents to the college faculty and is matriculated forthwith. Without this certificate he cannot, under any circumstances, be entered in any college in New York State. This certificate represents about the same qualification as a second grade teachers' certificate in Georgia. At the end of the third session the applicant goes before the Board of Regents, not the faculty, and if found worthy receives a diploma. The office of the colleges is to impart the information. The Regents award the certificates of merit. If such a law could be passed in every State in the Union what a glorious era would dawn upon us? We can hardly hope for so much as that; but it does seem that we might reasonably hope to see the colleges enter into an agreement to admit none except those possessing second grade teachers' certificates, or possessing qualifications to that extent. Let the Board of Education in the several counties do the preliminary examining, and let none be received who will not submit to such requirement. A man who knocks at the door of an honorable profession, expecting to have conferred on him the title of doctor, which should, and has, ever since the beginning of the world, been considered a mark of meritorious distinction, ought, in the name of reason and common sense, to possess education enough to pass a second-grade teachers' examination.

Dr. H. H. Johnson, Macon.

Dr. E. S. Rinehart, of Chehauhan, Mexico, objects seriously to Dr. Louis Ottfoy's proposal to prohibit all students from practicing dentistry after matriculating, till they are graduated. Of course they may not be able to do all classes of work, but to reduce to practice what they have been taught in lectures, clinics and laboratory, he thinks a great help to their experience and skill.

Then, too, he knows there are many who, if deprived of this temporary resource, could not finish their studies, "Many must work their way through or give up the fight."

This was so with himself. He was obliged, not only to economize, but to earn all he could in the simpler manipulations of the profession. And he thinks in this way he learned as much as he made, and he graduated with much greater honors than he otherwise could have done.

BOROLYPTOL IN DENTAL PRACTICE.

This comparatively new compound is an efficient germicide, deodorant and antiseptic, due largely to the formaldehyde and acetoboro-glycerid in its composition. For the former substance it is claimed that it is the most powerful germicide known, possessing distinct inhibitory action on all microbic life, molds and fungi, even in a solution of the strength of $\frac{1}{20000}$. The zymodical action of acetic acid has long been recognized; it, with boro-glycerid, imparts to borolyptol additional germicidal power. The remaining constituents are: *Pinus pumilio*, *eucalyptus*, *myrrh*, *storax*, and *benzoin*, happily combined to form a non-irritating, non-toxic, unchangeable antiseptic and germicidal medicament; its use to the oral surgeon is readily recognized. In such conditions as stomatitis, inflammation of the mucous membrane, lacerations of gum from extraction, mercurial impressions, gingivitis, alveolar abscess, antral disturbance, etc., the result of its employment is gratifyingly observed; as a mouthwash it is agreeable and efficacious; there is a delightful balsamic fragrance emanating from it that is highly appreciated by the patient.

D. E. Wiber, D.D.S., Washington, D. C.

On reading the article from J. E. Davis, on page 394 of the July ITEMS, I was forcibly impressed with its lack of logic. If it is unprofessional to advertise, why is it "one great failing of legitimate practitioners not to educate the public through the press to properly appreciate the superior skill of the legitimate practitioner, as compared with 'so-called advertising quacks?'" If "good dental work speaks for itself," why rush into the press with "lots of hurrah and blowing" about our "superior skill and reliability?" If the old saying is true that "ignorance ever flaunts itself, while true science and knowledge are clothed in modest dignity," why show our "ignorance" and lack of "modest dignity" by "flaunting" before the readers of the press our "superior skill and reliability?" We agree with Dr. Davis that "the best work is done by the artist who quietly sticks to his business." As dental artists our business is dentistry, and not to "educate the public through the press to show our "superior skill and reliability," thus placing ourselves on a level with "so-called advertising quacks."

G. G. Brock.

DENTAL LAWS IN OTHER COUNTRIES.

In the Province of Manitoba the requirement is a certificate of intermediate examination of a high school.

New Brunswick requires a fair knowledge of English grammar, composition, arithmetic, geography, English and Canadian history, algebra, geometry, chemistry and Latin.

Nova Scotia requires a compulsory examination in the English language, including grammar, composition and writing, decimal fractions and the extraction of the square root; algebra, to the end of simple equations; geometry, to the first three books of Euclid; Latin, one book translation and grammar; elementary mechanics of solids and fluids.

France requires a preliminary examination in the history of France, geography, arithmetic, either physics or chemistry; either algebra, geometry or mechanics; either zoölogy, botany, or geology; either the English or German language.

The Royal College of Surgeons, of Edinburgh, requires that all students who intend becoming candidates for the license in dental surgery shall have their names inscribed in the register of dental students, instituted by the general medical council. Such candidates must pass the complete examination in the following subjects: (1) English language, including grammar and composition; (2) Latin, including grammar, translation from specified authors, and translation of easy passages, not taken from such authors; (3) Elements of mathematics, comprising arithmetic, including vulgar and decimal fractions; algebra, including simple equations; geometry, including the first book of Euclid, with easy questions on the subject matter of same; elementary mechanics of solids and fluids, comprising the elements of statistics, dynamics and hydrostatics, and one of the following optional subjects: Greek, French, German, Italian, or any other modern language; logic, botany, zoölogy, elementary chemistry.

Dr. H. H. Johnson, Macon.

About four months ago I made an aluminum crown for a lower molar in my own mouth. It worked very well till two weeks ago, when I noticed that the metal was being slowly decomposed—my mouth suffered also. The secretions seemed to eat right through the metal. I noticed in your valuable magazine that most, or, I might say, nearly all, dentists are of the opinion that the saliva does not affect aluminum. Can you account for it?

F. A. Reisacher, Portland, Oregon.

OUR COLLEGES.

It seems that we can not get along without hitting a blow at the colleges. I have no patience with it. I believe that our advancement as a profession is, to a very great extent, due to the colleges. I think they are doing a manly work. If there are any men in the profession who are making sacrifices to advance the profession it is the men who are teachers in the colleges. Have we seconded their efforts? Where are our libraries? Where can I go for information if I want to study any professional subject, or to examine dental books that I do not own?

Why is it that there are no adequate means in our profession for studying the science of dentistry? Simply because the rank and file of the dental profession have not done their duty in following up the work of the colleges. The college simply gives its students the beginning of an education; they can not say what the end shall be. You can not say that of your children, whose characters you are supposed to mold from birth to maturity. I know it is said, "Train up a child in the way he should go, and when he is old he will not depart from it;" but somehow a good many sons and daughters get into wrong ways before they get old. Is that always their parents' fault?

Wm. H. Trueman.

Resolutions adopted by the Odontological Society of Chicago, on the death of Dr. J. J. R. Patrick, of Belleville, Illinois.

WHEREAS, Death has removed from our midst Dr. John J. R. Patrick, of Belleville, Illinois, and there has passed from the scenes of human activity a character whose labors have enriched the stores of science; a man who delved fearlessly and steadfastly into those mysteries of nature which call forth the most subtle energies of the human mind and yield results, making the lives of succeeding generations happier; now, therefore, be it

Resolved, That in the death of Dr. Patrick, the world loses an honored citizen-soldier, the field of science a conscientious, faithful laborer, and the dental profession a light whose extinguishment will kindle the profession's interest in the work he has accomplished for it, and thus extend his good influence; be it further

Resolved, That to the family, friends and professional associates of Dr. Patrick we extend the assurance that we appreciate his worth, and are grateful that his life had been spared till it nearly completed the allotted time of three-score and ten.

James A. Swasey, Allison W. Harlan, Louis Ottofy, Com.

SPYER'S ADHESIVE PLATES.

In my practice I employ the following method in the use of Spyer's adhesive plates, with satisfactory results.

After the case is packed, a piece of muslin, such as comes between sheet rubber, having been washed to remove the starch, is laid in its wet condition on the rubber, covering the whole surface, and up to the edge of the flask; then the flask is loosely closed and put in boiling water and allowed to boil for ten minutes, after which it is placed under the screw press and gently screwed down till the two halves of the flask come together; then the flask is separated and the cloth removed by wetting it. The adhesive plate, properly trimmed and slightly warmed over a spirit lamp, is then laid on the rubber, tin-foil side up, and the flask is again closed and put in boiling water and allowed to boil for ten minutes, after which the bolts are placed in the flask and screwed down, the flask put in the vulcanizer and vulcanized one hour and thirty minutes at 300.

After the case is vulcanized and finished it is placed in pure muriatic acid and allowed to remain in the acid for an hour or more, and afterward washed with soap and water. The muriatic acid eats all the tin from the adhesive plate, removes all unpleasant odor, and the acid does not affect the adhesive plate nor the rubber.

Jos. A. McGrail, Mechanical Dentist, New York.

Dr. W. V. B. Ames made before the recent Illinois Society a gold inlay, restoring the anterior proximal surface of the right superior central incisor. A piece of gold plate (24k.), 36 gage, was burnished into the cavity and stiffened with a piece of Watt's crystal gold. The piece was removed, and gold solder (20k.) was flowed around the crystal gold, uniting the two pieces.

The inlay was then placed in the tooth and a much larger mass of crystal gold was molded by the fingers to proximate shape, inserted in the inlay and with a broad burnisher formed into something near the contour desired.

Eighteen karat solder was then used to unite this mass with what was already in position and the surface was covered with 22k. solder, using Knapp blow-pipe.

The advantages claimed for this method are that the pulp was not destroyed, the color was better than a pure gold filling and less cutting of tooth structure was required.

CURRENT THOUGHTS.

WORKING FOR DOLLARS AND CENTS.

Dr. Wm. H. Trueman.

It seems to me this idea that there is a difference between a professional man and a business man is mere theory, and can not be borne out in practice. I would like to ask what it is that an honest, upright business man may do that a professional man can not do? What can I do as a business man that I can not do as a professional man, and what can I do as a professional man that I can not do as a business man? I consider myself a professional man, but I consider myself a business man also, and I am very sorry that I am not a better business man. If every professional man were a business man there would not be so many that, after a long and brilliant professional career, as age advances and they lose their grip—as lose it we will, if we live long enough—the outlook reveals nothing but poverty and the grave.

I have seen many such cases; some are very, very sad. How much better it would have been for them, their families, the profession, and the communities in which they lived, had they been better business men, and had paid more attention to that important matter of dollars and cents.

We should also recognize that the poor have claims on the services of our profession as well as the wealthy. People of limited means are far more numerous than those who are able to pay liberal fees. Now, in what other way can this condition be met? What should we do when a man earning six to twelve dollars a week, out of which he had himself and a family to keep, applies for relief from an aching tooth? Should we curtly tell him, simply because he is poor, that he had better have it out; or should we take from him a month's wages, treat and fill it for him in the highest style of the art; or should we, by a more simple and less expensive service, do for that tooth the best that could be done for a fee its owner was able to pay? What does the code of ethics suggest on that point? There are vastly more poor people, and people of moderate means, than people of wealth in every community; and if you will take the trouble to examine, you will find that these poor people need a dentist's services quite as much, if not more, than do the more wealthy neighbors. Is it a violation of the code of ethics to endeavor to adopt our methods to meet their needs? If so, why?

We recommend one treatment for those who are willing and able to pay, and another for those who are not. Do not physicians do so? The millionaire's wife comes in suffering from, say, nervous prostration, and they say to her: "The best thing you can do is to cross the water and spend six months in Italy or Southern France;" and probably that is the best thing she could do. But is that their advice to the mechanic's wife? They have to advise the mechanic's wife differently. A man must adapt his treatment to suit the patient's means. Now, I would like to ask, in what way, manner, form or shape does this violate the code of ethics?

Office and Laboratory.

A NEW DEPARTURE.

At the late First District Dental Society Dr. W. G. A. Bonwill's special clinic was to show by diagrams his latest revelation in dentistry. He informed us that so far the experimenting was satisfactory, and as soon as he could definitely settle on the most certain and scientific way of shaping and inserting the innovation he would fully demonstrate it. By this method much annoyance and uncertainty would be saved to those who wished to follow his method.

The process has no name as yet further than "Implantation of Metal Tubes or Pins of Gold or Iridium, into the Solid Alveolar Processes," one or more, to retain one tooth, or full upper or full lower set.

By this means the artificial teeth are held firmly in place in the mouth with only enough plate to cover the ridge. The plates are removable, and are as firm as any of the best bridge-work or crowns.

To prevent the tubes from being loosened, the perfect laws of articulation must be understood, that no undue pressure laterally will be brought to bear on one side more than another to cause absorption of the processes. Or instead of tubes in all cases, heavy wire can be inserted with a head on it for attachment to the plate, or with a screw, or by various other methods or appliances which require experimenting with before success can be claimed in the hands of the ordinary dentist. By this method no change can occur to the metal, nor can absorption of alveolus take place if the substitute is so placed in that the force is borne equally from all sides.

He is dead set against the bridging of modern dentistry, with so much gold showing, and the mutilation and vandalism of the human teeth. Necessity calls for some plan by which dentists can

be taught to regard the profession as one of the highest arts known to the mechanical world, and all art should be made to conceal its own work. To this end he has always aimed and accomplished, and begs dentists to wait a few months for the result of investigations and experiments.

Dr. Bonwill had present a patient from Philadelphia, for whom he had placed in many large triple gold fillings, covering the whole mesial and distal, with grinding surface of the first and second superior bicuspids, and the first superior molar, both sides, and the second bicuspid lower left. The object was to show his method of plus contouring. He has advocated for many years the separation of all teeth posterior to the cuspids, both upper and lower, by placing in pink gutta-percha (never the white). It is the best of base-plate material. This is placed in one solid piece between the teeth, and no separation made between the teeth. The whole space is completely filled, and in the course of three weeks to six months the masticating on these teeth gradually forces them apart from the pressure on the gutta-percha. It does not expand, but is driven apart.

The spaces thus gained save tooth substance, pulps are retained alive, pain is lessened, more lasting results are insured, and the space in time gives greater facility for placing in the gold.

The spaces between the molars should be much greater than between the bicuspids, as the former teeth have so much wider surfaces and more incline to decay if no such precaution is taken.

He called special attention to the advantage of gradually wedging the molars farther apart, and in all cases having so much space at the cervix that no secretions can accumulate, nor even saliva remain long in contact from capillary action. The great object, however, is to get plus space, that the alveolus may again grow far up on the cervix and give support to the gum at this point, which, when the roots are too close together, is absorbed, and the gum has nothing to which to cling for life. Hence the gum at the cervix is always loose and never firm, allowing the food and mucous secretions from the gum to be held at the cervix, and a recurrence of decay is sure to take place.

Plus contouring of all fillings he advocates, and he assures us that the articulation of the teeth is not interfered with, as when the spaces are filled on several sides the teeth rearrange more perfectly. He gains space unconsciously, and while it is such a saving in every way to the patient, it gives him command of all his patients, so that he can call them in at any time he desires.

The present system, and as hitherto practiced, allows of stagnation at every cervix. He claims still further that no proper full

contour can be made unless the filling is carried as far out on the buccal and palatal and lingual surfaces of the bicuspids and molars, as to prevent contact of any tooth-substance.

He further claims that the cavity at the cervix cannot be cut away when the rubber dam is first placed on. He never does it, only when he goes to fill after weeks of separation by the gutta-percha.

He showed how he makes all matrices for both gold and amalgam out of the gutta-percha, and how it can be made to hold up the rubber at the cervix when no clamp will do it, by warming and then pressing up the dam ahead of it and holding till cold.

Cosmos.

PERPLEXITIES OF DENTISTS.

Dr. Ezra F. Taft, Cambridge, Massachusetts.

We see at once that education has had its influence. It makes no difference whether it is a practitioner in an exclusive locality in one of our large cities, or in a wooden business block of a back country town. If he is a dentist taking such a stand as will do honor to his profession, his callers will be the rich and the poor, the educated and the ignorant; those who appreciate good work, and those who are so distrustful as to ask many questions before even telling why they have called. They are callers, but not all patients. If a man's time is fully occupied, he will naturally work for those patients who most appreciate his work, and are willing to pay what it is worth. Fortunate is he if he can employ some assistant to relieve him of multitudinous cares, and especially to see all visitors.

An early appointment, to accommodate some one who is going away, finds your first patient a little late on account of early household duties. You begin your work for her, however, when some one steps in just for a moment to speak of one of the many hundred things that seems little to the patient, but which is a certain amount of hindrance to the practitioner.

Next, a gentleman calls on the way to his business to make an appointment for his wife. A lady has entered; the rustling of paper in her hand gives you encouragement that a bill is to be paid, and you gladly step in to see her. Your surmise is correct; but, before handing you the money, she begs you to look at your books, to make sure there was not a mistake in the number of fill-

ings indicated in the bill. She is sorry to detain you, but it will only take a minute, and she will be better satisfied.

A nervous, fidgety woman steps in next, to say, with a voice heard almost in the street, that she had not worn that under set of teeth hardly an hour since they were put in. They would not stay in place, and her mouth was too sore for anything.

A little girl runs in to tell you that her mother was obliged to go away, and couldn't keep her appointment the next day, and, after taking several minutes in studying the appointment-book, another time is set. A self-important young man, in joyous costume of latest cut, holding a lighted cigaret between his fingers, would like to know if you had any leisure time this morning, as his wisdom-tooth was giving him trouble.

If you are in full practice it is a great help to you, and is money well expended, to have some kind of assistant; yet even then it is often necessary for the dentist himself to see the caller. Many reserve parts of the day for consultation, examination, etc.; yet I do not believe it is possible to carry out that plan, as but few patients would learn of that rule, and when known it would be almost impossible to confine themselves to certain hours. You are in a profession depending on the public for your practice, and to the public you must cater. If your time is fully occupied, you would be glad to put up a sign on your door as to whom you would like for patrons, but that also is impossible. Your callers are from all classes. You must be, at least, civil to every one. Fortunate is that man whose practice is not a local one, but whose patients seek him from miles around, and who makes many of his appointments through the mail. We speak of a man who, through good work and a good name, has secured a large practice, and has the most of his regular office hours filled with appointments for two or three weeks in advance.

The dentist who is in full practice can have no respite during the working hours of the day; and it is not simply mechanical labor, but a continuous effort of the mental and physical powers of the operator. He will work for one patient only a short time, whose nervous organization is such as to try the most patient man. He will work for another a full half day, and, on account of the equanimity and serenity of this person, will be but very little tired, and fully equal to the work required of him the rest of the day. Standing, as many do, from 8 or 9 in the morning till 5 in the afternoon, with one hour's intermission at noon; and not only this, but meeting and working for all classes and conditions of men; children, whose eyes and actions show an uncontrollable fear; women, whose nervousness stands out in their very voice;

men, whose time is so valuable that their impatience is almost unendurable—under these varied circumstances, what is to be expected? There may be a constitution now and then made of iron; there may be a nervous organization so wiry that no amount of twisting and pulling can harm it; there may be one occasionally who has the happy faculty of so directing his work that it leaves no bad results; but the average man can not do this. With his time all occupied, he finds himself at the close of the day a mental and physical sufferer. Let this be kept up and the overstrained nerves will finally yield. Physically, there are few professions calling for such constant strain on one's system. The enforced and unnatural position, which must be sustained for so long a time, will introduce us to the pangs of rheumatism, lumbago, and kindred ills. The strain on the eyes, which is so constant, brings on a series of head troubles, from which very few of us are free. All this means that the average practitioner is doing more than he is able, and does not know any method of lightening his labors, and still hold the practice he desires to have. It means that he is not master of his own time, but a slave to his patients and friends.

Three brothers were comparing notes on their different occupations—the one a bank-teller, the second a physician, the third a dentist—each claiming his life was a struggle, and more undesirable than the others.

The teller, especially, laid stress on the fact that his time was not his own; that his hours were defined, his work was to be done every day, with no cessation. Whatever his physical feelings, or his longing for a little outing, he was under the control of a higher power that said "No."

The physician felt he was a burdened man. To be sure he was his own master; but his life-work was to battle with disease, and as he had the care of the health of different families, he had great responsibility; he must be ready to go night or day, and have but very little leisure or time that he could calculate on as being his own.

The dentist's life was looked on by the other two as most attractive by comparison; perfect control of his time by appointment, making his day as long as he saw fit, drawing such a line among patients as to exclude those who were undesirable, and, finally, so remunerative—large fees with but very little expense.

Doubtless this is the way our profession is regarded by many who look only on the surface, but the busy dentist could quickly convince them of their mistake, and prove to them that his calling ranks among the most wearing of occupations, physically and mentally, made so in part by petty annoyances to which I have be-

fore alluded. If, then, the daily routine of our professional life is such that not only is our time taken up with regular appointments, but we are usually overcrowded by reason of the many interruptions which must come in every man's practice, we must conclude that we are bowing ourselves too much to the will of our patients; we are not free men to do with our time as we would wish to. We have our intimate friends, our old patients—yes, new ones whom we are anxious to hold, who appear before us and ask our favors. The solution of the problem is a difficult one. You may say the remedy lies in two ways—have some one to assist you, or be wilfully independent. I cannot believe the assistant will very much relieve the situation, and such independence is contrary to our nature. Let us, then, accept the situation, that while we are professional men we are also Yankees—after the almighty dollar. We seek for honor, and wish to be held in esteem by the public and our professional brethren; but we also wish to make a living, do something more than simply pay our expenses. Very natural, then, when overcrowded with patients, to try and accommodate all, to work early and late rather than let some slip from our grasp. Under these circumstances what must the dentist be to withstand all this and meet with success? He must be a lineal descendant of both Job and Sampson. He must be firm, and yet sympathetic; be able to so control the mind of his patients that they will not worry him; be amiable, and woe to him who loses his temper. Good humor will sell more goods, build the best houses, plead the most successful cases, write the best sermons, and perform the best dental operations. Some one has said, "A melancholy musician may compose a dead march, but he cannot storm the castle of the soul with the rhythmic artillery of lovely light and joy." A melancholy poet may write Dante's "Inferno," but he cannot give us Milton's "Paradise Lost." The world is full of music. The man who can sing and will not sing ought to be sent to Sing Sing.

"It is easy enough to be pleasant
When life flows by like a song;
But the man worth while is the one who will smile
When everything goes dead wrong."

If it is impossible to curtail our work while in the office, let us do all we can to recuperate when out of it. Let us ride some hobby. In change we find the most perfect rest. Don't forget the couplet of Oliver W. Holmes—

"Run if you like, but try to keep your breath.
Work like a man, but don't be worked to death."

REMARKABLE MENTAL ENERGY AND MEMORY.

The power of the human mind in blind persons to produce and retain before itself, as if on a mental blackboard, vast arrays of things, positions, and figures, almost as tangible and fixed, so far as being there to refer to for the time as the real blackboard before the eye of the sighted is astonishing.

Permit me to give a case which is regarded as very remarkable. Professor John A. Simpson, of Raleigh, Director of Music in the North Carolina Institution for the Education of the Blind, though blind from childhood, is one of the best educated men in the State. He is a graduate of the institution he now serves, as also of Trinity College, North Carolina, from which he received regularly the degrees of A.B. and A.M., notwithstanding there were at that time, some twenty-five or more years ago, no embossed text-books of any value; and hence he was compelled either to have the prescribed course of studies read to him, or to copy the books laboriously by the use of an embossed alphabet. His studies there and since were of necessity carried on largely without the help of teachers, and he was thus forced to compare one authority with another and otherwise test his own work at every step.

In this thorough manner he has gone over the whole field of mathematics, from algebra to quaternions, omitting nothing and working out every problem mentally. In the same way he has mastered several ancient and modern languages, and has by his own work accumulated a very valuable manuscript library in Latin, Greek, French, German, Italian, and Spanish. His life has been devoted mainly, however, to music; his task being to train his blind pupils to become teachers of the sighted, and in this he has been eminently successful.

As pianist of a local philharmonic society, he has accompanied entire cantatas, masses, and oratorios without error and with finished precision. Once, when a schoolboy, he multiplied mentally, without the aid of any apparatus, a number consisting of twenty figures by another number equally large. At another time he committed to memory the whole of Milton's "Paradise Lost." He has frequently read very difficult pieces of music while sitting at the fireside, and then gone to the piano and performed them without leaving out a note. He can readily detect, locate, and rectify any ordinary defect in a pipe organ; take the largest and most complicated of them to pieces, repair their most delicate parts, and tune them to exactness.

T. C. W., in Scientific American.

CORROSION OF ALUMINUM.

In order to ascertain the effects of the weather on ordinary sheet aluminum, Professor A. Liversidge has had two shallow dishes made of one twenty-fifth inch gage metal, of the best commercial quality, and exposed on the roof of the laboratory, University of Sydney, from November 23d, 1893, to December 7th, 1894, or fifty-four weeks. The metal was made into basins so as to catch rain-water, and to give the salts, etc., which it might hold in solution, an opportunity to act on the metal. The metal soon lost its brilliancy and became somewhat rough and speckled with large light gray patches; it also became rough to the feel, the gray parts could be seen to distinctly project above the surface, and under the microscope they presented a blistered appearance. This incrustation is held tenaciously, and does not wash off, neither is it removed on rubbing with a cloth. The raised parts are considered due to the formation of a hydrated oxid. Contrary to expectations, the cups had not lost weight, but had even increased. One weighing 13.91 grm. had increased by 0.104 grm., and the other, weighing 13.865 grm., increased by 0.080 grm. After boiling in water for some hours, and rubbing, the first still showed an increase of 0.77 grm. and the second of 0.055 grm. To ascertain the effect of common salt, a plate of the same metal, 3 by 4 inches, and weighing 19.829 grm., was repeatedly dipped in a solution of sodium chlorid and allowed to dry for three months; this lost 0.019 grm., and after washing and rubbing dry 0.59 grm.

One reason for making these experiments is that Mr. H. C. Russell, F.R.S., the Government astronomer, some years ago tried aluminum cups for a rain gage, but found that they were so quickly corroded through that he had to relinquish the use of the metal (if they had been gilt they might, however, have answered well enough). It is a very common thing to see aluminum recommended on account of its lightness and its assumed permanent lustre; this assumption being due to the statements repeated from book to book, that aluminum is unaltered by exposure to the air, to the action of water, hydrogen sulfid, and only slightly by dilute acids. The absolutely pure metal may be permanent in the air, but the best aluminum ordinarily attainable is, in this respect (in Professor Liversidge's opinion), little, if at all, superior to zinc. The commercial metal does not retain its lustre, but very rapidly acquires the appearance of old zinc. Recently it has also been found that aluminum is acted on by sea water. Hence the claim, often advanced, that aluminum is a metal resembling gold or silver in not oxidizing, rests on a slender foundation.

The Optician.

DENTAL STUDENTS IN GERMANY.

Much controversy has lately arisen as to the necessity of a dental student absolving the nine classes of the gymnasium, and many have advocated the passing of the Realgymnasium (seven years, I believe), as sufficient for his preliminary education.

The Realgymnasium excludes Latin and Greek, and substitutes more of English, French, and the natural sciences. This question is not entirely settled, and the student now enters the university with the same preparatory knowledge as his medical confrère.

The university studies of the dental student need not exceed four semesters, or two years.

The only German universities that give special courses to dental students are: Berlin, Leipzig, Breslau, Halle, Freiburg, Kiel and München. The time of the dental student's studies is usually divided as follows, if four semesters are taken:

First.—Physics, chemistry, anatomy, physiology, dental technics.

Second.—Physics, chemistry, anatomy, physiology, histology, lectures on operative dentistry, practical operative dentistry, dental technics.

Third.—Physiology, general pathology, surgery, medical and surgical clinics auscultando, therapeutics, lectures on operative dentistry, practical operative dentistry and dental technics.

Fourth.—Surgery, surgical and medical polyclinic auscultando, operative dentistry, dental technics.

This is about the course of the dental studies, and they do not seem to deviate much from those of our American universities, with one exception; the material which enters the university is differently prepared from ours. The student who enters the German university is accustomed to study, his cerebral hemispheres work together, the nine years of preliminary training having necessitated such combined action.

For this reason the German physician, and I believe the German dentist, possesses more real scientific knowledge and education than his American competitor.

Now the question would arise: Is the German medical and dental practitioner practically better qualified than the American medical and dental practitioner?

The medical part interests us less. Such men as Virchow, Helmholtz and DuBois Raymond, have thus far not grown on American soil. Why? Because they are greater men than any we have in America? No! Because their preliminary education

has equipped them with minds better prepared for the study of the minutest ramifications of all the sciences.

The lack of preliminary education of their students is the one fault which so many of our American universities possess.

Have the Germans better dentists than the Americans? God bless them, no! With all the learning the German possesses, he lacks intellectual dexterity which the American professional man has attained to in such a high degree.

The German is ponderous; the American is always ready to use his knowledge for practical purposes. He wants to see a positive result from what he has learned. Give an American boy the same preliminary training as the German, and he will surpass him every time. It is for this reason that I consider the American medical man an equally good practitioner, and the dentist a superior one.

The tendencies of our American universities are of such a laudable nature in the direction of bettering all existing faults, that I believe the time will come when the western hemisphere will attract people, not only for its material riches, but for its intellectual and artistic wealth also.

This exposé has become much longer than I had anticipated, but the ground is very broad.

Concerning the dental infirmary of Berlin, which, aside from the dental hospitals of London, is the only one that I have visited in Europe, I can safely say that it ranks with the best ones of America. The students are doing relatively good work, their methods are copied from our American schools, and therefore differ but slightly.

They do considerable gold filling, a thing the German dentist does not do very much of when he gets in his practice.

The operative branch of the college is under Prof. Miller's direction, which accounts for its superiority.

The infirmary work at all other German colleges is said to be considerably inferior.

Dental Practitioner.

SIMPLE METHOD OF CLEANING IMPRESSION TRAYS.—Give the impression trays a coating of sweet oil with a woolen cloth dipped in the oil. Put them in strong soap-suds (made with soap shavings or powder), boil and wipe dry. Now polish with whiting by using a soft woolen cloth, or fine leather. In this way you can keep your trays bright and clean, and the plaster will not adhere to them.

E. B. Edgers, D.D.S.

VULCANIZING RUBBER.

Dr. Cyrus A. Allen, Buffalo.

It should always be borne in mind that the degree of heat indicated by the mercury bath thermometer never registers a degree of heat corresponding to that of the inside of the vulcanizing pot where the case is being treated. The figures for this statement are as follows: If the stratum of atmosphere enclosed in the pot above the water line (when the cap is adjusted) is not expelled, on a degree of heat sufficient to generate steam being reached, we can always confidently rely on our thermometer registering from 15° to 18° F., according to the amount of water, below that actually existing within the chamber. Not only this, but we must always be prepared to take into account a considerable loss of registering power of the thermometer, through the influence of radiation of heat, the convection of air currents, temperature of room, etc. To these influences you can always safely charge a loss of registering power of the thermometer of at least 15° F., and usually more, it often being 20° F.

If these figures can stand verification, and I declare that they can, what will be the result? Simply this: the man who does not expel the atmosphere from the pot really subjects his case to a temperature of at least 30° F. more than that indicated by the thermometer. If he does expel the atmosphere, he still has 15° F. more than that registered. From this point our deductions are easy. We have declared that the destruction of vulcanite begins at 300° F. As an illustration of this point, let us imagine a case being treated at the old-fashioned 320° F., without regarding these two influences. The result is easy. Instead of 320° F., we have at least 350° F. If the stratum of atmosphere is expelled, we still have 335° F., to which our poor case is being subjected. If these figures and those preceding them are correct, we find ourselves treating vulcanite anywhere from 50° F. down to 35° F. above where the destruction of the compound actually begins. We are now asked what will be the manifestations of this unscientific treatment of the most abused and least understood body in the dental world. Every child in the land associates with rubber the property of elasticity, and that to the degree of exceeding in this respect any other body known to him. Do the high temperature plates retain this characteristic? By no means; on the contrary, they have entirely lost it. Why? Because the extreme temperature to which they have been subjected has destroyed this natural inherent characteristic.

The early workers of vulcanite will tell you that to-day we cannot produce a plate which can be constricted at the heels, as they "used to do," and thereon see it return to its former relations. The reason for this is obvious. The pioneers in vulcanite were instructed to vulcanize at a low temperature—say 280° F. Besides this, the machines placed on the market at that date were so constructed that the heat was carried up and re-directed on the pot, thereby losing but little by the convection of air currents and radiation. If this be true, we now have to account only for the loss of the registering power of the thermometer by virtue of the stratum of air left in the pot. We have stated this to be equal to 15 or 20° F. This reasoning will easily solve the true degree of heat to which the case was subjected, and at the same time demonstrate why that property of elasticity was not lost in the work of the vulcanite pioneers.

The next manifest injury to the base for our purposes will be in its extreme contraction. It should be borne in mind that vulcanite is affected by thermal changes more than any other solid body. Its rate of expansion in ordinary temperatures is somewhat over six times that of iron, about five times that of brass, and nearly four times that of zinc. This extraordinary expansion on the application of heat will conversely manifest itself by contraction when the opposite thermal condition is applied. How and where will this extreme contraction be manifest in dental plates? If your case be of the stupidly-contrived "gum sections," it can express itself only at one point, at the "heels," with a consequent raising of the body from contact with the model at the posterior part most manifest, but really extending itself well anteriorly. How can this be demonstrated? There is but one way. Preserve your model after vulcanization and restore the plate to it, when the extreme degree of contraction will be only too manifest. The base will have no manner of contact at its posterior part with the model on which it was vulcanized. This contraction in the use of gum sections with properly ground joints, must necessarily be at the rear, as the arch cannot be crushed. In the use of plain teeth, the contraction is diffused throughout the entire plate, and consequently does not appear so prominently at the point mentioned.

The question may be asked, "How can the model be preserved?" This is perfectly easy. As soon as the temperature is reduced to the proper point, open the flask, remove the dentine from the model, and at once place the latter over a gentle heat for a time sufficient to expel all moisture.

Another result of excessive temperature in vulcanization, and the inevitable contraction in the molecular rearrangement which

will follow, may manifest itself in cracked sections or chipped joints.

Still another condition may present with "spongy" points, usually to be expected at the thickest part of the body. Our deductions from the foregoing are, that all bodies of vulcanite treated at a temperature above 300° F. (actual) will show:

First.—Destruction, increasing proportionately with temperature elevation, and loss of elasticity.

Second.—Extreme contraction, resulting in the plate having no membranous contact across the posterior part.

Third.—Broken or cracked sections, or slivered at joints.

Fourth.—Sponginess of vulcanite at the thickest portions, which may be manifest over a considerable surface, or may appear only at certain points, in size and shape quite like a split pea.

Remedy: Any or all of the foregoing results may be obviated by maintaining a temperature within the vulcanizing pot throughout the entire period which shall not exceed 300° F.

Dental Practitioner.

VULCANIZED RUBBER.

Dr. Cyrus A. Allen, Buffalo.

Some of our high attenuationist friends boldly declare red vulcanite plates to be the origin of all obscure physiological derangements, charging as they do that the coloring pigment is red oxid of mercury, which is highly irritating to mucous tissue. The absurdity of this charge is clearly manifest when it is stated as a fact, that our coloring pigment is simply sulfid of mercury. This preparation possesses no toxic, or even disturbing physiological effects, and may be brought into mucous contact with impunity.

Experimentation by thorough processes aided by the most delicate instruments, has demonstrated that the quantity of mercury which it is possible to evaporate from a vulcanite plate before actually destroying the body itself, is only infinitesimally small. It should be remembered that to have even this slight manifestation of its presence, a high degree of heat must be attained, a condition which would not be sanely looked for in the human mouth, not even in some of the red-flag temperments of Western New York.

In the process of vulcanization it is conceded we first have fusion of the component parts of the body under treatment, which occurs at definite temperatures. What are these points of fusion?

Any work on chemistry will place you right on the melting point of the sulfur in the mercury compound—and that will be

237° F. As to the melting point of the hydro-carbon compound (rubber), elaborate experiments by Dr. A. P. Southwick prove beyond the possibility of controversy that this will be at 248° F.

Now, with the component parts of our body all fused, we may naturally expect the commencement of that remarkable and little understood physical change in the compound which we term vulcanization. That this change does begin at once on the fusion of the compound ingredients, and that vulcanization, as we understand it, may be fully completed without the addition of a single increment of heat, is easily demonstrated. All that could possibly be required in addition to the present conditions would be a continuation of the 248° to 250° F. over a longer period of time. If doubt as to the truth of this statement exists, let me suggest that he can easily obtain a "lazy man's proof" of it, by asking any manufacturer of rubber garments how he treats the articles as to temperature, time, etc.

If he regards you, by the honesty manifest in your face, as one who is only seeking scientific knowledge, he probably will tell you the truth. If he regards you by the honesty absent from your face, you will probably loom up as a possible competitor or spy on his business, you will be compelled to seek information elsewhere.

Continuing in my quotations of the authority mentioned, I confidently make the statement that the actual destruction of vulcanite begins at 300° F., and continues in proportion as the temperature is raised up to 600° F., where rubber will be entirely dissipated, the sulfur being affected in the same manner at 824° F.

Dental Practitioner.

WOOL SCOURED WITH NAPHTHA.—The employment of naphtha as a cleansing subject in the scouring of wool is a new method favorably commented on by scientific papers. By the use of a pump, the naphtha is forced through and through the wool, extracting all the natural oil, it being also claimed that the naphtha does not injure the fiber of the wool, as does alkali cleansing, but leaves the fleece in an actually better condition than when cleansed by any other process. A further valuable feature mentioned of this method is, that the grease that is extracted from the wool may be extracted in a pure state, thereby becoming valuable as a medicinal agent for a saponification into the purest of soaps. A plant following this method is said to have scoured 500,000 pounds of wool and had saved a product of 80,000 pounds in pure wool oil.

Sun.

GOOD AND EVIL MICROBES.

"What about the benign bacilli? Is any one keeping track of them?" a reporter for the *New York Times* asked Dr. Adami recently, after the conference of bacteriologists in the Academy of Medicine was at an end. Dr. Adami is an M. D. of Cambridge University, a former fellow of Jesus College, and the present Professor of Pathology and Bacteriology in McGill University, Montreal.

"The benign bacilli are not only the subject of marked attention," answered Dr. Adami, "but the discoveries made in regard to them have sometimes been of great commercial importance. For example, Prof. Conn, of Wesleyan University, Connecticut, has investigated the ferments which unite to give various kinds of butter their distinguishing flavors. He has found that the characteristic taste of Danish butter is due to one kind of bacillus.

"By making pure cultures of this bacillus, Prof. Conn has found the means of improving the butter of the dairymen in his neighborhood, so as to make it sell at an average of two cents a pound higher than before. After the culture has been prepared, it is added to the cream used in making the butter, and the pleasant, sharp, fragrant taste of Danish butter follows the activity of this species of bacillus in all the cream in which it has a chance to propagate itself.

"Perhaps it is worth while for me to say that Prof. Conn might have made himself a very rich man through this and similar discoveries; but he preferred to give it free to the world, as so many other leaders of science have done with their discoveries.

"Then there are the benign bacillus, which makes some of our best known cheeses delicious through the green mold which it forms. This is the identical green mold which we see on old shoes and on decaying oranges and lemons. The peasants who make Roquefort and Gougonzola cheeses have known for centuries how to make and transplant this mold. They take some bread and pour acid on it, and allow the compound to stand for several days. After the mold appears they dry and powder it, and add to it their cheeses, where it sets up the green decomposition which adds so much to the value of thoroughly ripe cheese.

"Now that we understand nature's method of making such changes, we can induce them artificially and with a certainty of the result we wish to attain, whereas, in former times, we could only reach the goal by haphazard."

"Have bacteriologists generally accepted the theory that it is the products of the bacteria and not the microbes themselves which are the causes of disease?" asked the reporter.

"I think you may say that every addition to our knowledge uniformly points toward the soundness of that theory," replied Prof. Adami. "It was broadly shown in the first place by straining the bacilli out of the liquids in which they flourished, and then injecting the strained liquid underneath the skin of animals. In nearly every case the characteristic disease appeared, though its bacillus was absent. In some cases it has not proved true, but this may be due to imperfection of method; and there is no insurmountable fact, so far as I am aware, which would destroy this hypothesis."

"Can any one tell the difference between benign and malignant bacilli simply by their microscopic appearance?" was the reporter's next question.

"No, they cannot," was Dr. Adami's reply, given with emphasis. "For instance, there is a benign spirillum which the most accurate observers might easily mistake for the characteristic bacillus of Asiatic cholera.

"There is scarcely a malignant microbe which has not its benign counterfeit under the microscope. Bacteriologists do not rely on the microscope exclusively, but on the whole history of the germ which they have under observation; its behavior in different media, such as broths and milk is one test; its action upon animals, such as rabbits and guinea pigs, is another. Of course, those who have an every-day acquaintance with the bacilli of tuberculosis or diphtheria soon get to recognize a certain variety and fixity of forms under the microscope, which makes them all but sure that they either have or have not what they are looking for.

"Some observers seem to believe that the immunity produced by attenuated cultures of the bacilli of particular diseases is due to the fact that there is only a limited quantity of suitable food for each tribe of bacilli in the human body; that it is, therefore, a case of first come first served, so that the fully malignant germ dies of starvation if it enters the body after its attenuated relative has cropped the field."

"How far is this theory accepted?" asked the reporter.

"This theory is at present hanging between the earth and the clouds," was Dr. Adami's reply. "It is very plausible, and in some cases the facts seem to support it, but in others they are dead against it. The antitoxin serum of horses, for instance, will support diphtheria germs, and allow them to propagate in spite of the fact that we know it is immune. And there are other cases of immune bodies allowing malignant germs to propagate which present similar difficulties."

"Where is the greatest progress in practical bacteriology being made to-day?"

"In the United States," said Dr. Adami, promptly. "The people in this country have a splendid faculty for seizing hold of the best and most practical parts of new discoveries. Look at what they have done with electricity, and see what they are doing with bacteriology.

"The various boards of health are establishing bacteriological laboratories with the single view of increasing the general health of their communities. They take what is best of the discoveries of France and Germany, and prove their efficiency by the test of experience. I sincerely believe that outside of Berlin the best work in bacteriology in the world has lately been done by the Massachusetts State Board of Health in its investigations of the quality of drinking water, and of the best methods of filtering in general use."

Times.

HOW IS VULCANIZATION ACCOMPLISHED?*

The chemical nature of caoutchouc (koochook) is but little better known to-day than it was sixty years ago, when the products of its dry distillation were examined by Gregory. Recent study has shown that chief among these derivatives of caoutchouc is a liquid called isoprene, which has the important property of spontaneously changing into rubber, on long standing. Artificial rubber is thus a chemical possibility. Whether we shall succeed in making it commercially from isoprene seems very doubtful. The manufacture of cheap isoprene is an exceedingly difficult task, and we are not yet able to completely convert it into rubber. Chemically, caoutchouc or pure rubber is an "unsaturated" hydrocarbon, or, in other words, a compound of hydrogen and carbon possessing the chemical property of directly combining with other compounds and elements.

The chemical treatment of rubber in its manufacture is limited to vulcanization—the change effected by subjecting it to the action of sulfur at temperatures above the melting point of the latter or to solutions of chlorid of sulfur in the cold.

The chemistry of vulcanization has never been thoroughly investigated or satisfactorily explained. It is often spoken of as due to the "absorption" of sulfur by the rubber, or its formation of a "substitution product" with sulfur. These terms express, in

* Abstract of paper by O. C. Weber in the *Journal of the Society of Chemical Industry*. Prepared for the *India-Rubber World*.

- a conveniently vague way, the uncertain chemical theories regarding what actually takes place in the curing of rubber. It is fair to conclude that neither the vulcanization with sulfur nor that by chlorid of sulfur is in the least understood. Even such a simple question as that regarding the minimum quantity of sulfur required for vulcanization, or the equally simple one whether the vulcanizing action of chlorid of sulfur is due to the sulfur or the chlorin, are still objects of controversy. It is, however, agreed that vulcanization cannot be effected by less than 2 per cent of sulfur.

In investigating the chemistry of vulcanization the author worked with the cold cure process, because it effects vulcanization under conditions more easily under control than with sulfur and heat. Rubber vulcanized by chlorid of sulfur forms an addition product, the two substances uniting to a definite compound. Isolating this compound, the author was able, by suitable means, to entirely remove from it the combined chlorin, leaving the vulcanization product intact and physically unchanged. Any attempt to remove the sulfur from its combination with the rubber is unsuccessful, and results in the total destruction of the substance, thus proving that the vulcanization is entirely due to the action of the sulfur, and not at all to the chlorin.

Rubber will combine with its weight of chlorid of sulfur, forming a product containing 23 per cent of sulfur. This is the highest vulcanization product—*i.e.*, containing highest per cent of combined sulfur—that rubber is capable of forming. On the other hand, the lowest vulcanization product contains 5 per cent of combined sulfur. This is a homogeneous body, and contains no uncombined rubber. It is not simply a mixture, in unaltered rubber, of a rubber sulfo-chlorid. Between these products are eight other sulfo-chlorids of rubber, the whole forming a series containing from one to ten atoms of combined sulfur. The great difference in the physical properties of the end members of the series indicates that each of these ten varieties of vulcanite will have distinct properties to distinguish it. It is of great practical importance to define clearly the specific qualities of each of these products. The vulcanization of rubber by chlorid of sulfur consists in the formation of one or more of these sulfo-chlorids of rubber. The presence of chlorin is without influence on the state of vulcanization; it is merely the means in the chlorid of sulfur which enables us to act on the rubber with a double atom of sulfur in an effective way.

The present process of vulcanization with chlorid of sulfur does not admit of homogeneous vulcanization. A practical process based on the reaction between rubber and chlorid of sulfur

will ultimately displace the processes now in use for curing all kinds of rubber articles. The present sulfur cure is an exceedingly crude, unreliable, antiquated and unscientific process, kept alive by our ignorance of the chemistry of rubber. The process is essentially in the stage to which the work of Goodyear, Hancock and Parkes advanced it.

CHILDREN'S TEETH—BAD HABITS TO BE AVOIDED.

V. C. Bell.

Very early in life children may acquire bad habits, which shall result in deformity of the teeth, and hence parents should make a strong effort to correct them.

THUMB, OR FINGER SUCKING.—By this habit the lower teeth are forced inward and the upper teeth outward. These results are due to the peculiar way in which the fingers rest on the teeth during the act of sucking. Unless this habit is checked before the permanent teeth appear, it will result in disfiguring them, and speech and mastication will be impaired. The habit may be broken by wrapping the finger with muslin saturated with some harmless preparation, disagreeable to the taste.

LIP SUCKING.—This is another habit which may result in depression of the lower teeth. The child, by drawing the lower lip in the mouth, exerts a pressure on the teeth, and they are forced inward to such an extent that deformity results. The space for the back teeth is greatly contracted, and extraction of one or more is required to make room for all the teeth in the arch.

If the child cannot be broken of this habit in any other way, a fixture similar to a splint ought to be made and put between its teeth and lips, so as to make it impossible to draw the lips in the mouth.

MOUTH BREATHING.—Mouth breathing also produces irregularity of the teeth. This habit, most commonly indulged during sleep, is frequently due to some nasal obstruction of the air passages. In these cases surgical operations are often necessary. Sometimes the habit is acquired when no organic trouble exists. The most effective way of breaking this habit is that employed by the Indian mother, who bandages the mouth of the child, and in this way forces it to breathe through the nostrils, or not to breathe at all. Rubber appliances, working on the same principle, are in use to-day, only they are free from the barbarous character of the Indian method; that is, they work on the principle of inducing

nose breathing, by making it so difficult to breathe through the mouth that the child readily accustoms itself to breathe through its nostrils.

CRACKING NUTS, ETC.—Teeth must not be used as nut-crackers. Like the bones, they are not solidified in early life. Even if they are, cracking nuts with them will soon result in their destruction, as they were not intended for such violent work.

CANDIES.—Children should be advised to abstain from candies. I mean cheap candies; that of the best quality is harmless enough, but the cheap candies are frequently mixed with acids and arsenic, the latter being used as coloring material. We need hardly add that these foreign substances are most destructive in their action on the teeth.

EATING.—Children should be prevented from drinking very cold water after partaking of a warm meal. With Americans the use of ice-water is very common. Very often after drinking hot coffee or tea, a large quantity of cold water is drunk. This mixture of the warm and cold is very injurious, not only to the stomach, but also to the teeth. The habit should be broken in childhood, because when once formed it is difficult to overcome. But unless the food contains a generous supply of tooth-building material, no amount of cleanliness or correction of bad habits will suffice to preserve the teeth.

An eminent physician, speaking on the subject of food, says, "Our pale-faced boys and girls are brought to this condition by living on butter, sugar, and superfine flour. To prepare these articles, the very elements that make bone and tissue are extracted." The child must be fed on plain, substantial food; it must not be too fat, or too rich; all pastries being avoided. A teaspoonful of lacto-phosphate of lime, or lime water, administered three times a day, will add greatly to the strength of the child's teeth.

As soon as the milk teeth appear the utmost care should be taken of them. The child should be examined by a dentist at regular intervals, say of six months. It should not have any of the temporary teeth extracted, but have them filled wherever necessary, and so preserve them till the permanent teeth are erupted.

Mouth and Teeth

Dr. J. L. Libby, of Glen Echo, California, is dead. He was a prominent and successful dentist and a good citizen.

J. W. Benham.

AN EASY METHOD OF REFITTING PLATES.

At a meeting of the New York Odontological Society, Dr. Davenport gave the following method for refitting plates. He said: Within the last week I have been so pleased over the accomplishment of something which I have not often done that I decided to speak of it here. A lady who had been for some years wearing a full upper denture, recently consulted me because the plate would not keep its place while eating or talking. While the plate fitted accurately and had good suction when it was made, it has recently—the mouth being very soft—become exceedingly loose, and it seemed imperative at first to make a new plate, very much against the wish of both the lady and myself, for the proper arrangement of the teeth in her case takes much time. As it happened she possessed a full upper rubber plate, which she had not worn a number of years, and the teeth on that plate were satisfactory to her in appearance, but of course the plate did not fit. I suggested experimenting with the old plate, to see if I could not so change it that it would answer her purpose. A plaster impression of the mouth was taken, the band of the plate was cut down almost to the teeth, and the entire center cut out, so that nothing was left but sufficient rubber to hold the teeth in place. This being placed on the plaster cast and waxed up as usual, was next tried in the mouth and slightly changed to obtain the correct articulation, after which it was finished in the usual way. The result was satisfactory, and the whole thing was accomplished with small expense.

From International Dental Journal.

Charles Lamb was the author of many wise and consistent sayings, and when he penned, "Not only strike when the iron is hot, but make it hot by striking," he changed an ancient proverb, which was growing too old for the advancing age, and made it fitting to these days of advancement and of ambition. At one time the business may have prospered, the managers of which waited till the iron was hot before they struck the telling blow, but in these *fin de siecle* days we must keep continually striking, and if there is no other way in which to heat the iron it must be heated by the force and by the rapidity of our blows.

The man who says that business is poor, and, therefore, does not put forth all his energies, is following the ancient proverb, and his business will continue in the same old rut; but the businessman of the day will do well to write and securely fasten on the front wall of his brain, "Not only strike when the iron is hot, but keep it hot by striking," and if he finds his business slow-dragging and cold he would do well to immediately begin swinging the sledge, and with it strike continued blows, and thereby "heat the iron," and set the molecules of his business in rapid motion, and in this way produce the magnetism and health which are sure to produce a stimulation in business.

Power.

PRACTICAL POINTS.

Mrs. J. M. Walker, Bay St. Louis, Mississippi.

Tin and Amalgam Fillings.—A tin filling covered with amalgam gives a combination of tooth-preserving properties and hardness of surface for grinding purposes that can not be had in either or separately.

G. Chisholm.

Tin and Amalgam in Proximal Cavities.—In proximal cavities in bicuspids and molars, cut through from the grinding surface, forming a compound cavity; fill at least half full with tin, and finish with amalgam.

G. Chisholm.

Pulp-capping in Deciduous Teeth.—In case of accidental exposure in excavating, fill a little saucer-shaped cup of platinum with a paste of oxid of zinc with carbolic acid and oil of cloves, equal parts, inverting over the point of exposure. Fill the cavity with oxiphosphate. The cup prevents pressure; the paste sterilizes the exposed point and allows healing by first intention.

T. G. Perry.

Acute Pericementitis.—Apply a hot pack to the neck and side of face. Give one-tenth grain calcium sulfid every ten minutes the first hour, every fifteen minutes the second hour, and every half hour for two or three hours longer.

R.—Acetanilid.....	gr. viii.
Syr. simple.....	3ij.
Spir. frumenti.....	3ij.

One-half at 5 or 6 P. M.; the other half at 10 P. M.

A. W. Harlan.

Local Anesthetic.—A 5 per cent solution of carbolic acid, four or five drops injected under the gum each side of a tooth to be extracted, will be found equally efficacious and less dangerous than cocaine. No constitutional effects.

C. T. Meacher.

Proportionate Doses for Children.—Multiply adult dose by age of child; divide product by twelve, and add age of child. Result gives average dose for children, except of calomel, of which they tolerate larger doses, and opium, of which they can take less than as above.

* * *

To Prevent an Abscess.—Give tincture phytolacca, 15 gts, every hour. I have been quite successful with this, in my practice, in preventing abscess.

C. G. Aven.

To Anneal Aluminum in Swaging.—Dip frequently in boiling water. * * *

The Anterior Proximal Surfaces of the First Permanent Molars.—After the baby molars are lost and before the second bicuspids erupt, cavities of decay or softened surfaces being favorably exposed, should be filled with gold in the most careful manner, with full contours, beveling the margins so as to allow of extending the gold out on all sides, so that the second bicuspids will rest against gold and not come in contact with tooth structure.

S. G. Perry.

Pyorrhea Alveolaris.—I have obtained better results by directing patients to rub their fingers on the gums, using listerin, than with anything else. * * * The constant accumulation of food and of microörganisms continue the disease, and the use of the fingers to rub the gums I find to be an excellent substitute for the syringe.

Dr. Littig.

Occlusion in Bridge-work.—Place cap-crowns and dummies on the articulated model, bolstering the dummies up with wax, and cement all together with wax. Remove carefully and transfer to the mouth, instructing patient to close the teeth firmly. Fill a bridge-work impression-cup with half-and-half marble dust and plaster, strongly primed with a saturated solution of sulfat of potash, and invert over the bridge in the mouth. When set, remove carefully, clean out the wax and solder.

Wm. Crenshaw.

Accidents with Nitrat of Silver.—Table salt will neutralize nitrat of silver accidentally reaching the soft tissues or mucous membrane. * * *

Mouth-wash for Ulceration following Arsenical Applications.—

R.—Acidi tannici.....	grs. x.
Potass chlor.....	3 ij.
Aqua	fl. 3 vi.

Three times daily.

Dr. Rehfuss.

To Allay Sensitiveness about the Necks of the Teeth.—Apply nitrat of silver and cover with phosfat cement of cream-like consistency. This prevents washing away of the silver and protects the surrounding parts. A. M. Holmes.

Gold—Cohesive and Non-cohesive at Will.—Ammoniate your gold when you want it non-cohesive. By annealing it becomes cohesive again.

Review.

To Prevent Shock or Collapse from Dental Operations.—

R.—Croton chloral hydrat grs. x.
 Spiritus vini galici 3j.
 Twenty minutes before operating.

John S. Marshall.

Alumnol in Pyorrhea Alveolaris.—Alumnol is a powerful astringent, having the property of coagulating and then dissolving the coagula; penetrating still deeper and reforming a coagulum; stimulant and germicide. Apply 2 to 7 per cent solutions in pyorrhea alveolaris.

A. W. Harlan.

Applications of Nitrat of Silver.—Thin asbestos felt, heated to redness in a Bunsen flame (to burn out any accidental contamination), charged with a strong solution of silver nitrat, furnishes a satisfactory means of applying this agent without danger to the soft tissues.

E. C. Kirk.

Root-canal Filling.—

R.—Oil of cinnamon 3 1/4.
 Gaultheria 3 1/2.
 Carbolic acid 3 1/4.
 Make into a creamy paste with oxiphosphate.

Open the canal and cleanse thoroughly; pump the above into the canal, and press home with a small cone of oxiphosphate.

J. W. Griffith.

Menthol Spray.—

R.—Chloroform 10 parts.
 Ether 15 "
 Menthol 1 part.

Use with hand atomizer, one minute or longer, for abscesses, felonies, etc.

* * *

Saving Waste Gold.—Keep all filings, scraps, etc., clean, and remelt, getting steel filings, etc., out with a magnet.

H. L. Crittenden.

Aromatic Chloro-Aristol.—For treating infected root canals and alveolar abscesses, with or without fistula :

Aristol	3j.
Chloroform	3ss.
Oil of cassia	3x.

Enlarge the root-canal and force the above through, using a smooth broach wrapped with cotton fibers. If not filled at the first sitting, pack the canal with cotton saturated with the same. An excellent dressing for an exposed pulp before capping.

S. Clippinger.

ITEMS.

TREATMENT OF ABSCESS TO FORCE MEDICAMENT THROUGH FISTULOUS TRACT.—Adjust rubber-dam, prepare the cavity and dry it, and fill with carbolic acid. With a piece of soft India-rubber—as near the shape of the cavity as possible, and a little larger—and a blunt instrument, force the medicine through the fistula.

J. N. Crouse.

* * *

A few days ago a large, handsome, stylish woman, calling herself Dr. Alberta Oberlin, of St. Louis, came here and advertised to pull teeth without pain. She found five victims, to whose gums she applied a liquid. Soon after the operation the patients were taken ill, their faces and hands became discolored, their tongues swollen and their stomachs affected. One of them is dying, and the dentist has fled.

Pittsburg Commercial Gazette

* * *

VERBATIM AD LITERATIM.—The following is a description of a case in practice received by the editor from a dentist who attaches D.D.S. to his signature.

“Tew begin with it has the appearanc of a large wart. It is a fengus groeth in the ruff of a mouth on right sid apposit byeuspids about the size of a dime—yellowis in color—in texture it is lik soft grissel—perforated at top like Cauliflower.”

Western Journal.

* * *

COULDN'T STAND THE PRESSURE.—An explosion, April 29th, in the dental rooms of George H. Coleman, on Washington avenue, Lansing, Michigan, shook the entire building and startled all in the immediate vicinity. On investigation it was found that Dr. Coleman, while busy in his laboratory, was suddenly thrown in a heap and covered with débris by the terrific exploding of a vulcanizer. Several window lights were broken, and Dr. Coleman's left hand was badly burned and cut.

Daily Paper.

* * *

There are many who fear to have a tooth removed because of the accompanying suffering. In reality, there is little pain in the extraction of a tooth. The sleeplessness, anxiety, and lack of proper food which precede the extraction, weaken the body, and hence the nerves are very susceptible to irritation. The pain of extraction principally results from these causes, and not from the extraction itself. Fortunately for the sufferer, however, by the use of nitrous oxid gas, the extraction of teeth may be made absolutely painless.

V. C. Bell.

DR. PERRY ON A USEFUL APPLICATION.—An eminent surgeon came to me the other day with one of his fingers wrapped up. He said, that while operating, a little poison had gotten under the skin through a slight scratch. I asked him his remedy, and he said the best thing he had found was ordinary acetic acid, which he applied after sucking the wound. He considered that better than anything he had ever tried. It penetrated promptly and quickly, and destroyed the poison with more certainty than carbolic acid or iodofrom, or anything he knew of. He spoke rather disparagingly of carbolic acid, but he said acetic acid would penetrate promptly, and was almost certain to act on the poison and effect a cure.

International Dental Journal.

* * *

A NEW SUBSTITUTE FOR GOLD.—A French technical paper, the *Journal del 'Horlogerie*, declares that a new amalgam has been discovered which is a wonderful substitute for gold. It consists of ninety-four parts of copper to six parts of antimony. The copper is melted and the antimony is then added. Once the two metals are sufficiently fused together, a little magnesium and carbonate of lime are added to increase the density of the material. The product can be drawn, wrought and soldered, just like gold, which it almost exactly resembles on being polished. Even when exposed to the action of ammoniacal salts of nitrous vapors it preserves its color. The cost of making it is about a shilling a pound avoirdupois.

London News.

* * *

Many patients do not appreciate the cleaning of the teeth, because their dentists are in the habit of cleaning the teeth free, when there is other work done. In thus donating this valuable service, the dentist receives no pecuniary return, and, indeed, but very little thanks; for people are not disposed to value very highly what they get for nothing. On this subject of cleaning the teeth I think there is especial need of public education. People who appreciate the disastrous effects of caries, and who aim to have their teeth promptly filled on the appearance of cavities, are very often negligent about having them regularly cleaned, because they do not know the importance of this operation from a prophylactic standpoint. The patient is usually satisfied with a superficial cleaning of the anterior surface of the teeth.

J. W. O'Bryan.

* * *

When a student has been long enough in college for his teachers to discover the fact that he is not qualified by nature, instinct, temperament, or any other capacity, to make a good dentist, there should be some regulation, some law to empower the

college to refund him his fee and reject him at that point. It is a most serious thing to carry a student along one year after another and try to hammer the fundamental principles into his brain, and the mechanical ingenuity into his fingers, and then find that he cannot become a good dentist. I hope some movement will be started before long whereby colleges will be empowered to tell a student after they have studied him carefully, that he is not qualified to make a dentist, and advise him to seek some other pursuit. There are too many misfits in the dental profession already.

C. N. Johnson.

* * *

Dr. George Watt, whose memory is still fresh in the minds of many of you, was the author of what is commonly known as the "mineral acid theory." He contending that decay was caused chiefly by the sulfuric, hydrochloric, and nitric. Sulfuric acid being responsible for the production of the black decays; nitric, the white; and hydrochloric, the intermediate colors.

Bridgeman says caries are the result of peculiar electrical conditions, the crown of the tooth forming the positive electrode, and the tissues serving to retain the tooth in its socket, the negative. These conditions being intensified through abnormal qualities of the fluids of the mouth, the lime salts in the crown of the tooth are liberated, the acids with which they were combined being set free, thus resulting in a molecular disintegration of the substance of the dentine forming carious cavities.

A. H. Peck.

* * *

The semi-annual meeting of the Dental Society of Southwestern Michigan will be held at St. Joseph, October 8th and 9th.

A good program has been arranged, and a very instructive and interesting meeting is expected. All dentists in Michigan and adjoining States are cordially invited.

For further information or copies of program, address

E. I. Backus, D.D.S., Sec., St. Joseph, Mich.

* * *

The Minnesota State Dental Association will hold its annual meeting in St. Paul, September 11th, 12th and 13th, 1895. The Executive Committee has arranged an interesting program. A cordial invitation is extended to the profession in this and other States.

H. L. Crittenden, Secretary, Northfield, Minn.

* * *

The annual meeting of the Northern Iowa Dental Society will be held at Clear Lake, September 3d, 4th and 5th. A good program has been prepared. Thursday afternoon will be devoted to social enjoyment—a tour of the lake, regatta, etc.

EDITORIAL.

EACH ONE OF US OF IMPORTANCE.

We may think ourselves of small importance; that it is of little account whether we are good or bad, and what our example is to others. But, as a mere particle of dust, a tiny grain of sand, the minutest atom, is an active agent in the whole universe, making itself felt through all the masses in our solar system, and through this system on all systems of the great expanse, so we are important in our sphere, however isolated and apparently unimportant.

A few particles of dust in a watch stop its motion, small barnacles on the ship's bottom hinder its journey, a little shifting sand in the great river changes its current; and so the ignorance of a few in our profession clogs its wheels, a few laggards retard its growth, and a little false teaching turns to a wrong direction the whole profession.

Whether in church or State, profession or society, we have our influence for weal or woe. Let our influence be great or little; our work be extensive or limited; we are of importance. The world has need of all helps, great and small; of all capacities, of all variety of talent, of all kinds of work.

This is of great comfort to those of us who are at best of small caliber. Superficially considered, the world seems moved by only great forces, great men, and great enterprises; but in the light of close investigation we see its main-springs are laid in what to human kin seem small and trifling, and within the reach and help of the most insignificant of us.

Besides, none of us can tell what to call great or small, important or unimportant, prime or secondary. We are constantly reminded of our mistakes in estimating as a trifle what afterward appears as the turning force of our whole life. And in great events, while we are looking for the mighty influences that brought them about, we are sometimes astonished to see the minute springs that gave them birth.

Great generals are necessary; but what are they without the rank and file behind them? Great financiers are important; but

what are these without the bone and sinew who work out their plans? Great men are important; but what are these without us small men to carry out the details of their great thoughts, and work to a practical issue their discoveries?

We are therefore all important in our sphere, and the more important as we do well our part; how important none of us know, and perhaps never shall know till eternity reveals it. In the future, many a man who estimated himself great shall be found in the running up of his account to have been insignificant, because unfaithful to his trust; and many another man, who estimates himself as of little worth, will find himself glorified, because he did what he could.

SLAVES TO BUSINESS.

There are dentists who have sold themselves to their business—soul and body, and every interest and social tie. They are shut up in it as completely as prisoners behind the bars—a cold, dingy, dismal prison, where no joy enters, and from which the bright, free dancing light and life and love of heaven is shut out. They are blind and dumb, and benumbed to all the innocence of youth; to all the inspiration of elastic manhood, and to all the calm, restful, ecstatic enjoyment of a perfected life. These men are very foolish. The more so, because all this seclusion, gloom, and heavy toiling are voluntary and unnecessary. By degrees they have brought it on themselves, and by degrees they have abandoned themselves to it, till they know no other life; and though they snarl at every one as the cause of it, they would not be in their element out of it.

We might as well live in a palace as a prison.

But there are men who live in palaces which are prisons. They have spent their very life for a grand mansion, and here it is. The great, cold, echoing walls; the heavy, dark blinding blinds, and the chilly, murky, musty atmosphere shut out all cheer and warmth and brightness. The man who built it is kept in office slavery to support it; and the wife, who lives in it, knows no rest.

Beautiful carpets, rich furnishings, esthetic fittings, every display of order and grandeur and exclusiveness does not make the love and light and joy of *home*. Where are the litter and prattle of romping children? Hidden away in the seclusion of a nursery, in the care of a "domestic." Where is the once bright, beaming, rapturous wife? Tired out with the burdens of fashion, and gewgaws and nonsense. Where is the broad-minded, cheery, bounding husband, that, when in an humble cottage, used to bring home sunlight and kisses? Into this gilded mansion he comes, nervous, exhausted, and aged.

Ah, home and life and cheer is made up of simplicity, heart-ease and restfulness, even though in the midst of business and care and responsibilities. Such a one finds that strength and wisdom and skill, patronage and power and position, comfort and pleasure and contentment—yes, and success, in its most exalted sense, comes from living in heaven while on earth.

The hours of business, as the prices of work, are in much controversy with some. But it is difficult for one to determine for another what the time of service should be. It evidently depends greatly on our endurance, and on the necessities of our patients; also, on our own necessities and pleasure. A young man with little money and a practice to acquire, should work more hours than an elderly man with an established practice and the means to take things leisurely. A man of delicate health should, of course, work less hours than one of robust habits. Then, again, there are communities where, for any reason, to restrict our attention to business would be ruinous, and others where early and late hours are in no demand. But there are few dentists who work too long or too hard. There are more who play and fool away their time too much—who are effeminate and lazy, lacking in ambition, aggressiveness and mental, moral and physical force. If they had to work as hard and as many hours as the printer or the farmer, they would be healthier and wealthier, and have better and healthier thoughts and lives.

THE POETRY OF LIFE.

Poetry is more than verse-making, more than the jingle of words, more than the sing-song of meter.

Sunshine and flowers, brightness and joyousness, the harmonies of the passions and the inspiration of love—these are the poetry of life.

Without poetry, life is a tread-mill; a veil of tears; a dreary waste. Even religion is only a crucifixion—a death to sin—if we have not the resurrection into the new life of joy.

Many of us make hard work of life by bending our back too much. We get dirt in our eyes by keeping them too near the dust and we get narrow-minded by our narrow radius of vision.

Thus, though counted by the world rich, we may be naked, and poor, and miserable. To become truly rich we must stand in the dignity of our manhood; walk in the integrity of our calling; and run in the rhythm of a poetic nature. Out of harmony is out of sphere. The dignity, integrity and poetry of life are all lost by inharmony, only the ashes of disappointment are left; but with these we can dance at our work, and turn irksome duties into joyous privileges. Instead of moping in the valley and shadow of death, we may live in the sunshine, where beautiful flowers and luscious fruits and delicious sweets grow. Many a man still living is groaning in the grave where worms and gloom and death reign, who might be on the mountain top, shouting: “Excelsior!”

Yes; yes; we might as well live in light as in darkness; make life a song as a dirge; and live amid glory as shame. With a radiant countenance, a beaming eye, and a loving hand, we can do more work, and have more to do; we can get more out of life, and have more life to enjoy; we can scatter more sunshine, and have more left for ourselves.

Christ came to bring to every toiler heaven. Let us get into it quickly. It is here we find the poetry of life.

In our own soul God writes poetry when we have Him as our companion. With Him, we can feel our souls swelling till we join Him in His anthems. Then our very spirits become a lyre of song and an epic of thanksgiving; our passions bask among roses and

our soul feeds on heavenly manna ; and God so wondrously changes the heart—which without Him is a rough, uncouth, gross, useless thing—that it is a lens so beautiful and clean, so pure and good, so admirably shaped and adapted to transmit His praises, that we can actually see God through it ! And if we turn this beautiful lens on the earth, we see everything dancing and glowing with the smiles of God. So transparent is it, and so magnifying God, that those about us, looking through it, can see heaven. Angels live in such a heart as that.

And this is the heart of the poetry of life and love that we should take into our business. It is sure to make of us all there is in us. It is sure to make our business our pleasure. It is sure to so develop the whole man as to make of us a beautiful, well-rounded character. It is sure to mingle kindness with skill, and make friends of patrons.

But ah, there is a poetry of love ; a secret thrill too sacred to unveil—two hearts that ever sing ! Here is a chamber poetic in its very atmosphere ; a mansion where a chorus of voices sing heavenly music, anthems so sweet angels stop to listen ; and God Himself comes to the banquet. It is,

“Home, sweet, sweet home.”

Sir, get gold if you can ; get honors and social position, and public applause—but above all things else human, and better than all else—get a home. Neither skill, learning or success ; friends, flattery or popular pleasures ; no other tie or environment or enjoyment can take the place of

“Home, sweet, sweet home.”

But, remember, willing will not bring it ; money will not bring it ; nor rich vians, nor anything outside of yourself and the one you love. It must be the union of two loving hearts, two pure lives, two spirits determined each to please another—two hearts made one. Where these essentials abide, there is

“Home, sweet, sweet home.”

and then

“Be it ever so humble, there is no place like home.”

This is the perfection of human happiness ; the harmony of the sphere ; heaven in miniature ; the poetry of life and love.

DR. BONWILL AS A "BOOK-MAKER."

For several years we have been pressing Dr. Bonwill for a series of chapters on Practical Dentistry from his own standpoint of forty years' experience for the ITEMS, afterward to come out in book-form; and we know he has been importuned so often and so long by dentists, here and abroad, that he has at last consented to enter this field, and will, before the close of the year, give us the first chapter.

Our readers need no introduction to this man. His name, inventions, discoveries, new methods of practice and progressive ideas have stood out in bold relief for four decades, and what he has done will be well worth embodying *seriatim*, that will show that he has a system which it will be well for all dentists to know, and contrast and profit by.

Dr. Bonwill, to reach all classes of operators, and make this work the more interesting and profitable, desires all who have any questions of importance to forward them in concise form as soon as possible after this date.

Let it be known that it is not to be a "Great Work"—voluminous—but his peculiar practice and theories in all departments of the practical dentist, and profusely illustrative to show every detail. The publishers will spare no expense to have him give to the dental world what he trusts will be a systematic reply to those who have long demanded it.

OLD AGE.

If death does not come to make old age impossible, it will come to the strongest and most youthful of us. But though the hoary visitant comes ever so softly and tenderly he is seldom welcomed. He may smile as he places the spectacles on our eyes, to give us our first hint that he is near; but we would rather do without them. He may whisper kindly: "Not quite so fast; let us walk leisurely, and talk pleasantly together;" yet, we would rather walk in our old gait, amid the bustle of business. As a

precursor of his coming he may adroitly scatter a few gray hairs on our head; but we resent his familiarity, and bid wife pick them out. We shiver at this old gentleman being so near, and following us so closely, and prefer the company of the young.

And yet how mysteriously he soothes our passions, and leads us to more quiet places, bidding us to look at the golden sunset, or pointing to the enchanting colors of the fall; or, taking us from the chilly frosts, leads us to the snug corner of the glowing fireplace. But somehow these golden sunsets and the beauty of the autumn have lost their charm, and this kindness to get us into the "old man's corner" is not appreciated. We prefer the bright and the growing summer, and the thrill of the busy life.

But, really, why should friends call me old? These gray hairs are premature, this slight dimness of vision and hearing is a trifle. True, we get tired; but many a lusty day's work we shall do yet.

"Ouch!" Never mind, it was only a stitch in the back. It was from overwork, not from old age. And these joints—yes, a little stiff; but they limber up by the warmth of work. You see wrinkles? Oh, well, these are from overthoughtfulness. See, I can smooth them all away by a smile. You say the hand trembles? I am a little nervous, that is all.

* * * * *

Ah, we are here now. How favorably disappointing the experience. Old age is not after all to be dreaded. Where is the loneliness I heard of? How singularly it has all vanished. What a blessing to have spectacles? What a charm this beautiful calm, this delightful zephyr, these eolian evening strains? Ah, the golden of this sunset is the opening of the door of heaven. Is it possible there was ever anything better than this in the heat and turmoil of a busy life? Oh, this quiet peace after a day's toil, this sweet rest! Yes, yes; in its retrospect and its prospect I see life at its best. The sweat-drops are wiped away by the breezes of heaven; the passions are soothed into delicious repose. The struggle is ended, and the war of elements are subdued, and I look out on the quiet evening sky thankful that just over there is *home*, my home.

HINTS.

Have an open countenance, but close thoughts.

* * *

A wise man reflects before he speaks; a fool speaks and then reflects on what he has uttered.

* * *

Dr. L. P. Bethel, editor of *Ohio Journal*, has been elected to the faculty of the dental department Western Reserve University.

* * *

Dr. Alexander Pope died suddenly in New York recently. He was an inveterate cigaret smoker, and his friends believe that this habit was the indirect cause of his death. He was 33 years old.

* * *

CARBON BLOCK HOLDER.—This is a very convenient device for holding carbon soldering blocks. It is very similar to those heretofore supplied, but with a flange to prevent block from falling through.

* * *

God does not choose for us, or compel our love; we are free to fashion out our own futures; but in making our final choice, we cannot afford to waste one moment of our precious unreturnable time.

* * *

Tact is the life of the five senses. It is the open eye, the quick ear, the judging taste, the keen smell, and the lively touch. Talent is power, tact is skill; talent is might, tact is momentum; talent knows what to do, tact how to do it; talent is wealth, tact ready money.

* * *

SEASONING OF STONE.—Stone, like lumber, requires seasoning, and is often not so solid as is generally supposed. A cubic foot of compact granite, for instance, weighs about 164 pounds, while a cubic foot of iron weighs 464 pounds, thus plainly indicating that there must be considerable space between the atoms of the most enduring stone, for air, moisture, etc. The seasoning of stone is well understood, and it should enter into the calculations of every good architect.

Our worst critics are those who deserve criticisms, our poorest teachers are those who need to be taught, our severest fault-finders are those who are full of faults. Criticism should commence at home. We should look within before we look abroad. Let us be sure we are right ourselves before we attempt to right others. We can see much better if our eyeglasses are clear; we can judge much more wisely if we have healthy thoughts; we can anathematize others much more wisely if our own heart is pure.

* * *

MOUNTING DISKS AND POINTS.—Dr. T. F. Chupein, in the *Dental Office and Laboratory*, says: "The best way to mount disks and points for the dental engine is with phosphate cement. Mix this thin or to a creamy consistency. Drop a small quantity in the hole of the disk or point, and daub a little on the end of the mandrel. Place the mandrel point in the hole of the disk, and make it true by putting the shank of the mandrel through the 'disk setter.' Let this remain till the cement gets perfectly hard, and you will find that the disk or point will never separate, which cannot be said of mounting these with gum shellac, as is generally done."

* * *

If an office is neat, clean and attractive, we look for a dentist that is gentlemanly, approachable and friendly. The amount of our skill is seen in our instruments and very finger-tips, royal standing looks out of our eyes, and intelligence and grace and culture are stamped on our features. A neat, nice, accurate workman will be precise, clever and delicate in his movements; a commanding, dignified, experienced dentist will have these qualities in his very bearing; impress them on us without an effort; show them without displaying them. His very approach will show you he is your dentist, and you submit with grace, confidence and assurance.

* * *

If we have confidence that we are a good dentist, we should surround ourselves with the evidences of our ability. A poverty-looking office is generally taken as the evidence of a poor dentist; untidiness as a slip-shod dentist; a dearth of literature as ignorance. We do not expect to find a clean dentist in an unclean office; an esthetic, approachable, genial fellow in a dingy, musty, repulsive atmosphere; a pure, sympathetic, warm-hearted gentleman with a breath of tobacco smoke and stale beer. What we are is generally stamped on what we appear; in fact, what we appear to be is usually better than what we are, so that we have no excuse for a neglect that hides any good qualities we may possess.

Who ever can make two ears of corn or two blades of grass to grow on a spot where only one grew before, would deserve better of mankind and do more essential service to his country than the whole race of politicians put together.

* * *

Twenty-four karat gold is all gold; 22k. gold has 22 parts of gold, 1 of silver and 1 of copper; 18k. gold has 18 parts of pure gold and 3 parts each of silver and copper in its composition; 12k. gold is half gold, the remainder being made up of $3\frac{1}{2}$ parts of silver and $8\frac{1}{2}$ parts copper.

* * *

A striking instance of the folly of neglecting life insurance was recently shown a few feet from me. A man in the prime of life was repairing a bicycle (this was his business) when his gasolin lamp exploded, catching his clothes afire and gutting his shop in an instant. He died in two days. Two weeks before he was urged to have his life insured, but replied: "Oh, there is no fear of me, I was never sick a day in my life." He leaves a wife and child entirely destitute. A dollar a week would have left them five thousand dollars.

* * *

We are eminently social beings, and when we sacrifice this essential feature of our character and happiness for gain, or position, or any other advantage, we can never get an equivalent. Irritability, selfishness and arrogance are sure to creep in, which fail to fill the void of departed warmth and innocence and love. Gold will not fill this void, nor finery or gilded surroundings, or any indulgences in artificial appetites and passions. All is gone when the spring of social enjoyment is dried up. We are dead while we live.

* * *

If, in a dentist's effort to show wealth, he displays the tinsel and gild of trumpery, we look for a shallow head and a deceitful hand. If, in his effort to show worth, he only gives high-flown words, stiff mannerisms and superficial foppery, we are afraid to trust him with the solid details of practical usefulness. He walks on stilts too much, and assumes airs that only glitter. Real wealth and solid worth are not showy; intelligence, broad mindedness and erudition are not loud; skill, accuracy, precision make no display. Wealth is substantial, worth is modest, intelligence is retiring, and skill walks quietly. Our best parts should be those not first seen; what we have found the hardest to acquire we hug with reserve; if there is anything we hold dear it is hidden. Every man should be more on second view than on first sight.

FOR OUR PATIENTS.

CALLING THE ANGELS IN.

We mean to do it ; some day, some day,

 We mean to slacken this fevered rush

That is wearing our very souls away,

 And grant to our goaded hearts a hush

That is holy enough to let them hear

The footsteps of angels drawing near.

We mean to do it ; O, never doubt,

 When the burden of daytime toil is o'er,
We'll sit and muse while the stars come out,

 As patriarch sat at the open door

Of his tent, with a heavenward gazing eye,

To watch for the angels passing by.

We've seen them afar at high noon tide

 When fiercely the world's hot flashings beat ;
Yet never have bidden them turn aside

 And tarry awhile in converse sweet ;

Nor prayed them to hallow the cheer we spread,
To drink of our wine and break our bread.

We promised our hearts that, when the stress

 Of life-work reaches the longed-for close,
When the weight that we groan with hinders less,

 We'll loosen our thoughts to such repose

As banishes care's distracting din,

And then—we will call the angels in.

The day we dreamed of comes at length,

 When, tired of every mocking guest,
And broken in spirit and shorn of strength,

 We drop, indeed, at the door of rest ;

And wait, and watch, as the days wane on—

But the angels we meant to call are gone !

Margaret J. Preston.



BRUSHING THE TEETH.

Brushing the teeth is a good thing ; but, like all other good things, it can be carried to extremes.

A gentleman said to me the other day, " What is the trouble with the marginal surface of my teeth ? "

Nearly every tooth was denuded of its enamel on their outward surface near the neck ; in fact, there was a deep pit across each, near the gum.

"Oh," said I, "you have been plowing."

"Plowing!" "What do you mean?"

"That is it; you have plowed a deep furrow across the front surface of each tooth till you have almost destroyed them."

"But I have used no plow in my mouth."

"Yes, you have; and you have dragged it along with extreme force. What is worse, instead of plowing with a plow of steel, and thus doing it at once, so that you could be conscious of the folly, you have used a plow of bristles, and kept at it for years."

"Oh, I understand you now; but I have been told by dentists that I could not clean my teeth too much."

"This is not cleaning them. It is scouring them; yes, plowing them. The most delicate and important protection of a tooth is its skin."

"I don't understand you. Do the teeth have a skin?"

"Certainly; just as much so as our body; and as by destroying half the skin of the body you kill the body, so it is with the tooth, unless you protect the denuded surface with an artificial covering. It is singular that away back in Job's time we hear of the skin of the teeth,' and yet you have not heard of it. Their lustre, and extreme hardness and beauty is this thin, transparent, but almost indestructible covering, even with your stiff, rough, strong brush of bristles it takes years of devilish persistency to destroy it, and then you generally have to add a free supply of some grit to help you. The teeth are the hardest organs of the body, yet the best of them will finally yield to this pernicious habit; but some teeth are not so hard; and then, as with yours, the plow does its work more rapidly. Quit this daily sawing across their front surface, and be content with merely cleaning them, and you may save them by plating the furrows with gold."



SOAP BUBBLES.—M. Izarn has communicated to the Academy of Sciences a new method for obtaining soap bubbles lasting a much longer time than those obtained from the soap water generally used. He has recourse to a resinous soap made by the following formula: Pulverize together 10 grams of pure rosin and 10 parts of carbonate of potash; add 100 parts of water and boil till complete solution. We obtain in this way a thick solution which may be kept in stock to be diluted for use with from four to five times its volume of water. It can be kept indefinitely even when exposed to the air. The bubbles produced are very persistent, and can be made useful in the study of phenomena relating to thin laminae and in making photographs in which soap bubbles play a part.

CHILDREN'S TEETH.

Dr. V. C. Bell.

As soon as the teeth appear they must be carefully watched. It takes some time to become solid and they easily decay. As to the best means for preserving them, there is much misunderstanding and lack of knowledge, and hence many a child's teeth are unwittingly permitted to decay. The following suggestions on the care of infant's teeth will be of service.

Children grow two sets of teeth. The milk teeth, twenty in number, and the permanent ones, thirty-two in number.

The milk teeth generally appear as follows:

Central incisor,	. . . . .	5th to 6th month.
Lateral incisor,	. . . . .	7th to 8th month.
First molars,	. . . . .	12th to 16th month.
Canines,	. . . . .	14th to 20th month.
Second molars,	. . . . .	21st to 36th month.

The eruption of the lower teeth usually takes place before those of the upper.

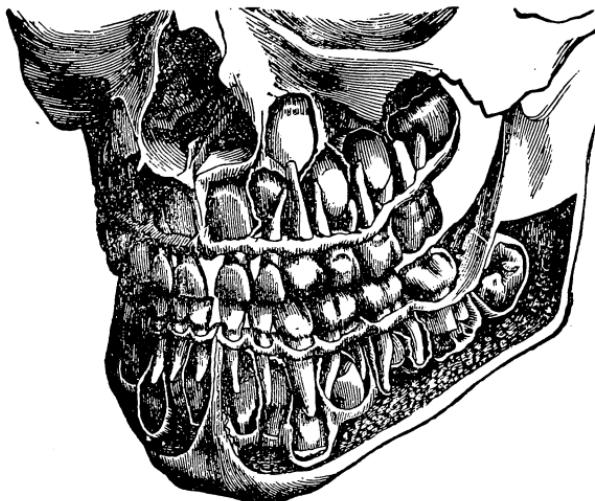
The permanent teeth appear in the following order:

First molars,	. . . . .	5th to 6th year.
Central incisors, lower jaw,	. . . . .	6th to 7th year.
Central incisors, upper jaw,	. . . . .	7th to 8th year.
Lateral incisors,	. . . . .	7th to 9th year.
First bicuspids,	. . . . .	9th to 10th year.
Second bicuspids,	. . . . .	10th to 11th year.
Canines,	. . . . .	11th to 13th year.
Second molars,	. . . . .	12th to 15th year.
Third molars, or wisdom teeth,	. . . . .	17th to 23d year.

As the milk teeth last but a short time, or till they are displaced by the permanent teeth, very little attention is generally paid to their preservation. Tartar and filth are allowed to accumulate, and as soon as they become troublesome they are extracted.

The idea that the milk or deciduous teeth should be taken out as soon as they ache, is not only erroneous but harmful. So long as they can be saved, they should not be removed, as serious injury is inflicted on the child. If these are extracted the incoming permanent ones are seriously interfered with; they grow out of their allotted space, or grow in an irregular manner, distort the mouth and impede the work of mastication. Nature indicates the time for their removal by absorbing their roots and loosening their crown, preparatory to the appearance of the permanent teeth. Moreover, it is somewhat dangerous to extract any of the milk

teeth, because the jaw is not yet perfectly developed, and is, therefore, very frail and liable to fracture. It is because of this belief



Jaws of a child at about six years of age. The deciduous teeth and the first permanent molars are in place. The outer plate of the bone is removed to show the advancing germs of the permanent teeth.

and the consequent neglect that the milk teeth decay so rapidly. As soon as they appear, they should be cleaned every day with soft linen, and when all the teeth are erupted, a soft brush should be used. Tartar, easily distinguishable by the dark or green stain which it imparts, should not be permitted to accumulate.

From the tables already given, it appears that at the age of six the child has four, and at the age of twelve it has twenty-eight of the permanent teeth.

The sixth-year molars deserve a special notice, because they are so frequently confounded with the first set of teeth. The reason of this is, that those back teeth of the upper and lower jaw on either side make their appearance before any of the first teeth are shed. If neglected, as they too often are, they are all early lost, and can never be replaced, except artificially. When you are able to count a row of eleven or twelve in each jaw, that is, as soon as there are more than twenty teeth in all, you may be sure that the last molars on either side belong to the second set.

During the eruption of the milk teeth, children frequently suffer from stomatitis, or inflammation of the soft parts of the mouth, due to the irritation produced by the teeth forcing their way to the surface. The mucous membrane, or lining of the mouth, becomes very red, there is an increased flow of saliva, the parts are irritable and sore, the child is in a feverish state, it is

disinclined to put anything in its mouth, or to take food either from the spoon or nipple, because of the pain which it experiences. The irritation and swelling may be so extensive that the entire nervous system becomes affected, and the child is thrown in convulsions. Relief may frequently be obtained by lancing the gums, and thus mitigating the irritating pressure of the incoming teeth, and by spraying the mouth, with a solution of fifteen grains of borax, or chlorat of potassium, dissolved in a tumbler full of water, or by painting the cheeks and lips with linseed.

Of course, during dentition children may suffer from many other diseases, none of which are within the province of the dentist. In such cases the physician should be consulted, and much unnecessary pain, if not serious consequences, may be avoided by a timely call.

George W. Childs gave one good motto for success, "Whatever your income save a quarter of it." If we saved an eighth we should soon be independent, and while we were saving we should not be very much less happy. A little plainer fare would do us good; a little more economy in show and gewgaws would give evidence of good sense, and much lopping off of bad habits, and hurtful indulgences would be better for us in body, soul and spirits.

A young lady getting fifteen dollars a week said she could save nothing. "Why," said I, "two years ago you earned but five dollars a week and kept within your expenses."

"Yes," she replied, "the more I make the more I think I must spend."

I had a clerk that lived on six dollars a week; when I gave him but six dollars he was healthy, innocent and happy; when I gave him ten dollars a week he began to complain he ought to have more hours to himself, and found it difficult to dress properly, and thought himself above doing menial work; with fifteen dollars a week he was borrowing of his fellow workmen, and couldn't find enough evenings in the week for amusements. I promoted him to twenty dollars a week and made a bankrupt of him in body, habits and purse.

I know another young man who would take only a quarter of his wages. The rest was left with his employer on interest. In six years the principal and interest, and interest on interest, made twenty-five hundred dollars; and, besides, the money he saved he saved himself; yes, made himself into a capable, successful business man.